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September, 1927

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ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in cooperation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of stream-flow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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CONTENTS

THE COVER
The Lure of the Wilderness Camp
Photograph by H. Armstrong Roberts

ONE HUNDRED AND FIVE MILES OF RAPIDS
By J. B. Halm 515

ANCIENT YEWS OF ENGLAND
By H. H. Warner 519

THE BROWN TROUT
By Ladd Plumley 522

DREAM FISHIN'
Poem by Joseph Buck 524

PINES OF PROGRESS
By G. H. Collingwood 525

THE BANDITS OF YELLOWSTONE PARK
By Mildred Durbin 530

A STRANDED COMPANY
By Frank Thone 532

EXOTIC TREES FOR FOREST PLANTATIONS
By Warren H. Manning 535

WATER IS KING IN CALIFORNIA
By Francis Cuttle 536

EDITORIALS 539

THE WHIMSICAL ROOT HABITS OF WESTERN HEMLOCK
By Allen H. Hodgson 541

THE SONG OF THE WHITE PINE
Poem by K. J. Braden 543

FAMOUS AND INTERESTING TREES 544

THE LESSON OF THE 1926 FIRE SEASON
By Fred Morrell 546

"PRESIDENTIAL TIMBER"
By Winifred Allen 549

NATURALIZING BULBOUS PLANTS
By David Griffiths 552

OUR 52ND BIRTHDAY 555

FOREST PEOPLE: JESSIE ACKERMAN—A WOMAN TREE PLANTER
By May A. Ross 557

WASHINGTON'S FOREST FIRE TRUCK 559

SAPLING SAM 560

AROUND THE STATES 562

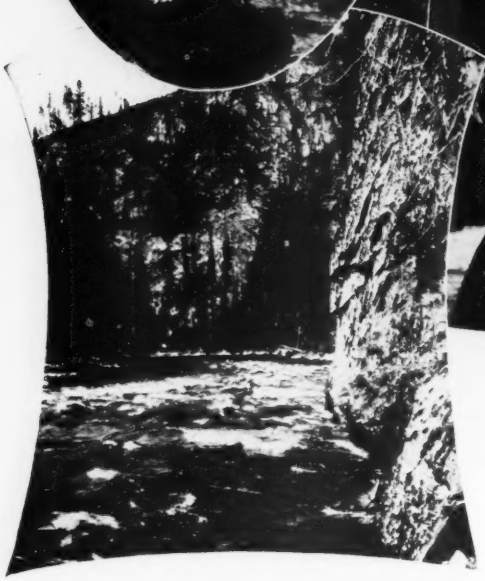
AMERICAN FORESTS AND FOREST LIFE invites contributions in the form of popular articles, stories and photographs dealing with trees, forests, reforestation, lumbering, wild life, hunting and fishing, exploration or any of the many other activities which forests and trees typify. Its pages are open to a free discussion of forest questions which in the judgment of the editor will be of value in promoting public knowledge of our forests and their use. Signed articles published in the magazine do not necessarily reflect the views of the Association. Manuscripts must be accompanied by return postage. Editorial and Publication Office, The Lenox Building, 1523 L Street, Washington, D. C.

The river roared and tumbled over gigantic boulders.

Our boat had been very carefully loaded and covered.

The river is a continuation of rapids from one end of the canyon to the other, and I shall never forget the thrill of that first ride.

Here we proceeded to skid our boat over the huge boulders.



Our line took us to the base of a perpendicular cliff, which we named "Castle Bluff."

AMERICAN FORESTS

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One Hundred and Five Miles of Rapids

By J. B. HALM

IT was all settled. I was to run a survey for the United States Forest Service, down the canyon of the North Fork of the Clearwater from the Orogrande to Isabella Creek. The turbulent waters of the North Fork find their source in the Bitter Root mountains, between Montana and Idaho, and flow southwesterly across the entire state of Idaho through Asahka to Lewiston, ten thousand feet below their source, where they join the Snake River, a tributary of the Columbia. The entire drainage of the North Fork is through rough, mountainous territory, densely timbered with pine and fir, and few, save the occasional prospector or trapper, had ventured into this wild and almost trailless region. Our survey was to be for a trail, the preliminary of a future road between the Orogrande and Asahka.

Two weeks later, Claud, Bill and I found ourselves alighting from the train at Orofino. Claud and Bill were university students, out for the summer and incidentally after field experience. Bill was an eastern lad, inexperienced in the ways of the woods but willing to learn. Claud was a good-natured western boy, keen and quick,—a wonderful combination of mental and physical ability, which three years later won him a

At the "Irish Railway"—an extremely dangerous rapids—we were almost into the current before we realized our predicament.

place as captain of the West Point Football team.

At Orofino, we outfitted with supplies and equipment for three months and the next day were loaded on top of our equipment behind two teams en route overland on our sixty-mile trip to the North Fork. We arrived at the old placer mining town of Pierce City, thirty miles out, just before dark. As we picked our way along the deserted street later that evening, the old log buildings, mostly vacant and crumbling to decay, which had stood since the gold rush in the early 60's, gave us a queer feeling of awe. The old Chinese cook who prepared our supper in the only hotel of the town, had come, so we were told, with the tide of gold seekers in the early days, and, like a piece of drift, had remained stranded after the tide moved on. Of the hundreds of Chinese who followed the early gold rush, he alone remained.

At dawn the next morning we were off. Sixteen miles farther on we reached the end of the wagon road. Pack horses took our outfit the remaining twelve miles down Orogrande Creek into the canyon of the North Fork to the "Bungalow," the end of the trail. The "Bungalow," located on a little bench at the confluence of Orogrande Creek and the North Fork, was merely an old log cabin with a large stone fireplace. It had, in all probability, been dubbed the "Bungalow" by some of the fishermen or hunters who had frequented this out-of-the-way place, or by the crew which had constructed the cable bridge across the river the preceding summer.

Frank, an old experienced riverman who was to act as our cook and boatman, had gone on a few days ahead to start the construction of our boat. He was overjoyed upon our arrival. He had caught several large trout which were on our menu for supper that night.

The week following was spent in felling trees, whipsawing lumber and building an eighteen-foot bateau, a boat such as rivermen use, made to stand rough water. A raft of cedar logs, six feet wide and twenty-six feet long, was also made. This raft was withed together with wild cherry and had a deck in the center built up above the logs. On this deck we lashed our cargo. Large sweeps were balanced on headblocks on each end. This raft and boat were to be our mode of travel down the canyon.

June is always a pleasant month in the mountains, but a blaze in the old fireplace was very welcome evenings as we sat Indian fashion around the hearth swapping yarns and singing old songs to the accompaniment of Bill's ukelele.

When our survey had been extended several miles, we made our first move. I had never run a river raft before and my experience with a bateau was limited to slow water. Although those first three miles of rapids were tame compared with what we encountered later, I shall never forget the thrill of that first ride. Our boat had been carefully loaded and covered, and I was instructed to stand in the bow and paddle straight ahead. At the word from Frank, I was to paddle hard, right or left. We pushed into the current. Standing awkwardly in the bow, I felt quite useless, but paddled as best I could. At the first white water, Frank called "Right!" Before I could respond, the boat lurched and I was on my knees in the bottom. The dangerous rock slipped by without touching us.

I glanced back at old Frank. His face was expressionless, as I found it always was when running rapids. With knee braced against the side of the boat, his keen eye on the spray and rocks ahead, his paddle skilfully guided the boat through to safety. I shall always feel that the safe and successful outcome of our entire trip that summer was due to the cool judgment and skilful paddle of our old boatman. We landed safely in an eddy just above Castle Rapids, as we later named them, where the river roared and tumbled over gigantic boulders.

Running the raft was much simpler than the boat, as the river was still swollen and few hidden rocks were encountered. We made camp in a beautiful spot on a tiny bench above the beach. As there was no trail back, and an almost impassable canyon ahead, we were now isolated from the outside world. The fir clad canyon with its steep and often perpendicular walls is one of scenic splendor. The beauty was unmarred by the hand of man. The river is a continuation of rapids from one end of the canyon to the other and each bend brought forth interesting surprises. Once, rounding a bend, we came upon a herd of five elk standing in the water. They displayed very little fright and two stood at the water's edge and eyed us curiously as we slipped by less than thirty yards away.

Bill had ambitions to take a turn in the boat with Frank on our next move. On Sunday morning he climbed into the bateau and with a long line attached to the shore practiced paddling in the eddy. As he gained confidence, he released the rope and paddled about among the drift in the eddy which had a way of filling and emptying periodically.

I was startled by Frank's cry, "My God! Look at that!" We all ran for the shore shouting and gesticulating. Bill was at the outer edge of the eddy calmly paddling down stream into the channel toward the rapids. He suddenly discovered his plight, and began to back paddle with all his might. In what seemed hours, he had checked the heavy boat, and Providence with him, as it seemed always to be on that trip, the eddy began to refill and gradually with the aid of the frantic paddling, the boat was drawn back toward the new vortex of the eddy. Bill had learned a lesson. That evening he confided his fears and told us, for the first time, that he could scarcely swim a stroke.

The following day our line took us to the base of a perpendicular cliff which we named and which is now known as Castle Bluff. Finding the water along the face of the cliff too deep to wade, we went back to detour over the top. When Claud and I had climbed

We enjoyed fried or baked trout almost daily, for Frank was an ardent fisherman.

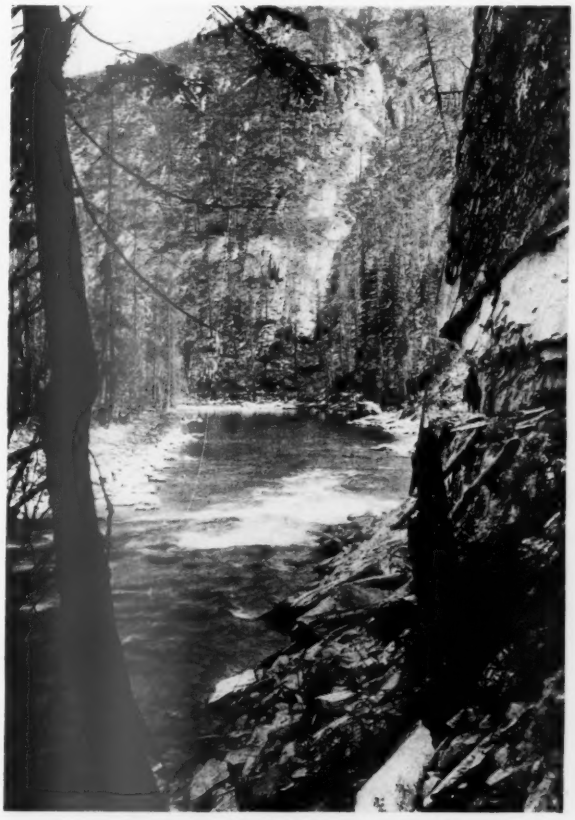
to the top, we sat down to wait for Bill. When he failed to appear, we called. Receiving no reply we feared something might have happened to him and climbed back to where we had left him. We found him sitting astride a scrubby little tree, some forty or fifty feet above the jagged rocks at the base of the cliff. He had slipped and lodged there; too scared to move or call he clung desperately to the friendly tree. It took us practically all that afternoon to extricate him from his predicament; had he fallen he would surely have been dashed to death on the rocks below.

That lesson failed to register. Two days later, returning from work, he again attempted a short cut across the face of another cliff. This time we saw a cloud of dust and heard an avalanche of rock hit the water. Claud and I scrambled to the river's edge as fast as we could. Bill had fallen thirty feet into ten feet of water. He had struggled to the surface and was holding to the face of the cliff when Claud reached him and pulled him out. How he escaped unhurt, or how he ever came to the surface with heavy boots, compass, revolver and belt ax, is still a mystery.

We selected our next camp site at the head of another dangerous rapids. We portaged the outfit past the Castle Rapids and I saw the raft with the three go safely round the bend past Castle Bluff. As soon as the raft was landed, Frank was to return for me and the boat, while the boys made camp. Late in the afternoon, Frank returned and between sputterings told how they had passed the camp site before they were aware of it. Frank had jumped ashore and grasped the blade of the sweep but the current had spun the raft around and pried him off the shore. Claud dived under the raft and grasped the other sweep, but he, too, was forced to let go just as it hit the rapids and disappeared in the spray.

The three then tried to follow, clambering over cliffs and through brush in the hope of catching up with it. They came to a big bend in the river and by climbing over a cliff, got a good view of the river beyond, but the raft was nowhere in sight. Exhausted and disheartened, they started back. Coming out on a point overlooking a part of the river, they discovered the raft lodged in a small eddy just across from them. It had passed under a sweeper near the shore and the canvas covering had caught on a knot. Frank and Claud swam the river and with the aid of an ax soon made a small raft on which they returned for Bill. We had lost our best camera, our stove and a number of tools, but our essential equipment was saved. The boys made camp at our new location and the savory smell of frying fish greeted Frank and me when we reached camp late that night.

Game animals common to this region were plentiful.



It was a wonderfully scenic trail following the line of the rocky cliff.

Scarcely a day went by that we did not see bear, deer and elk. Beaver, otter and mink were not uncommon. We saw snow white marmots, with their black noses and feet, foraging grass for their winter cache. These fat, sleek, little vegetarians were very plentiful and extremely tame, and startled us daily with their shrill whistle as we worked along the river.

We had heard much of the "Irish Railway," an extremely dangerous rapids, and were constantly on the alert for it. When we did reach it, we were almost into the current before we realized our predicament. Frank and Bill had gone ahead with the boat. As we rounded a bend with the raft, we saw Frank running over the boulders toward us, waving and shouting. We heard a roar. At that moment our raft slid through a trough between two rocks and I was lifted completely off the raft by a wave which hit my sweep. As I rolled back on, Claud threw a line to Frank on the shore who snubbed us in. He had seen us coming and had run back to warn us just in the nick of time. We portaged our outfit for a half a mile through tangles of brush, over boulders and logs to the beach below the rapids. We then cut and peeled long poles and proceeded to skid our boat over the boulders around the rapids. To add to the discomforts of that day, the no-see-ums hung around in swarms and drove us nearly frantic until we got into our outfit and doped our faces and hands.

The trail was carved in many places through solid rock.

Here on a point overlooking the river, the trail wound round under overhanging cliffs.

We had stripped our raft of everything including the sweeps. Carefully calculating the effects of the current, we let the raft down by line to the right place, then set it adrift. All might have been well, but a submerged rock swung the raft slightly out of its course. It was caught in the boiling rapids and spun around like a chip; a moment later our twenty-six-foot raft was standing on end in midstream, half submerged against a huge boulder. It looked as if we might be able to free it with a rope. Claud, in true western style, roped a corner of it with our three-quarter-inch line. We made a Spanish windlass, a contrivance with tremendous leverage to wind the rope. We found, however, that the new rope would not hold and began to figure ways and means of recovering the rope without serious loss. Here the little .22 came into play again. Claud cut that rope not a foot from the raft in three or four shots. Our next raft served two moves farther before it also was destroyed in a rapids.

Running rapids was a continuous performance on moving days and had a queer fascination for us. To stand braced on the deck of a raft wielding a twenty-four-foot sweep and trying to dodge all the rock in a brimming gorge with waves waist deep rolling over you, is an extremely ticklish and exacting job which

(*Continued on page* 556)

Ancient Yews of England

By H. H. Warner

IN his well known book, "The English Flower Garden," Mr. William Robinson writes: "We have collected within the past 200 years evergreen trees from all parts of the world and it is doubtful if any of these are better than the common yew which when old is often picturesque and which lives for over a thousand years. The yew is one of the most beautiful of trees but owing to its ignoble use in gardens, clipped into shapes of birds and beasts and to neglect by the gardener, it is rarely that we find a good yew in gardens or pleasure grounds. People do not plant it as if they meant to plant a forest tree and many do not know that it does grow into a noble tree. Let any one stand near the cedar-like yews by the Pilgrim's Way on the North Downs, and, comparing them with trees cut into fantastic shapes, consider what the difference means to the artist who seeks beauty of tree form!"

It is undoubtedly true that although no shrub is seen more frequently in an English garden than the yew, it is more often clipped to form a hedge or to create some figure—used for what is known as topiary work. One too seldom sees it well placed and grown as a tree. Yet of all England's native trees the yew is the longest lived and one of the most beautiful at all seasons of the year. It helped her brave bowman to win many a hard fought fight and its marvelous power of rejuvenescence, perpetual verdure, and strength symbolizes immortality. Man could desire no more fitting monument than such a living witness, growing greater with each century. Far more wonderful than any dead thing of his own handiwork, and more enduring than stone. Although no doubt there are yews in English church yards that have, as Mr. Robinson writes, "seen a thousand winters," it is very difficult to get any authentic record of when

THE MAGNIFICENT OLD YEW AT BROXBOURNE CHURCH, HERTFORDSHIRE

It measures over 19 feet in circumference three feet from the ground, and is split into three stems united at the base, and supported by chains. It is certain this tree is as old as the church, which bears the date 1522.

AN ANCIENT LANDMARK ON THE "PILGRIMS' WAY"
On the heights above Albury, on the Old Road, this sentinel stands where, 400 years before the Reformation, thousands of pilgrims passed and doubtless found rest beneath its ample shade.

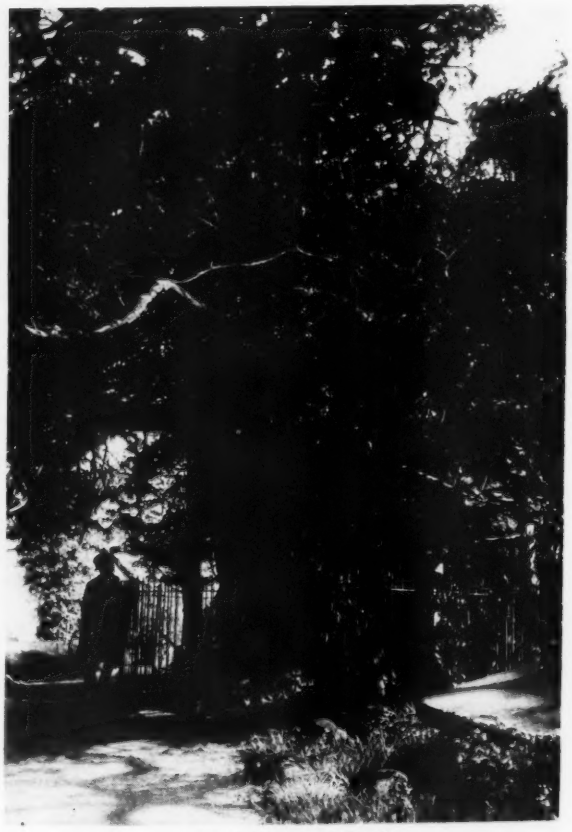
such ancient trees were planted or to get any real idea of their age. Mrs. Ady, in her fascinating book, "The Pilgrim's Way," which describes the historic road running over the higher ground from Winchester to Canterbury, tells us that the ancient yew grove at Newland's corner near Guildford, Surrey, is mentioned in the Domesday Book.

The average rate of increase in the girth of the stem of a yew tree, Sir R. Christison estimates, seldom exceeds 1 foot of diameter every 75 years, and with this estimate Dr. Lowe, who wrote the book on "The Yew Trees of Great Britain and Ireland" appears to agree. In the Church Register of Boughton under Blean, Kent, it is recorded that "the little yew by the South door was set in 1695." Its girth in 1894 was 9 feet, 9 inches at three feet from the ground. So we have a diameter growth of 3 feet, 3 inches in 199 years or 1 foot diameter in 61 years. This rate of growth is considered very fast for a yew, but to get any idea as to the age of an ancient tree one must also consider that it has to heal over wounds left by broken branches and exposed surfaces of dead wood, and to fill up the hollow trunk with new root-like growths. While this work is going on the girth of the tree increases little if at all. In the grounds of Mr. Abraham Dixon, at Cherkley Court, near Heatherhead, Surrey, there are over ninety acres covered with superb old yew trees which have evidently been sown naturally. It is perhaps the finest collection of such trees in the world. One of them, known as "The Queen," is 23 feet in girth.

At Kingley Vale, near Chichester, Sussex, there is another natural station for the yew, and in 1920 Mr. Seymour Eastwood kindly ran a tape round some of the trees for me, but he could only find four that exceeded 15 feet in circumference three feet from the ground. Five years before, he informs me, two of the largest trees were wrecked and damage was done to many others. The so-called "Druids' Oak" or "Sacrificial Oak" also lost a large limb. It is stated in a local guide book that these trees existed "when the Sea Kings landed in Britain" and it is probable that the yew trees from which these naturally sprang did grow there in that far-off time.

Many an ancient yew tree to be found in church yards doubtless dates from the reign of Queen Elizabeth when it was enjoined that "they should be planted in church yards to ensure their cultivation and protection and secure cattle from injury by devouring the leaves."

Close to the west end of Broxbourne Church, Hert-



THE CROWHURST YEW
This massive tree is over 40 feet in circumference at its base and is 29 feet in girth four feet from the ground. Standing when the Normans defeated the Saxons in the great battle nearby, it may even have furnished bows for the bloody fray.

fordshire, there is a yew, the main trunk of which, at three feet from the ground, measures over 19 feet round. It is split into three stems united at the base, but they are well supported by chains, and it is certain that this tree must be at least as old as the church, which bears the date 1522.

A short time ago I had the pleasure of seeing a still more ancient tree in the church yard of St. Andrews, Buckland, near Dover. The circumference of the main trunk is 22 feet, but in the year 1774 both church and tree were struck by lightning. The tower was demolished and the tree split from top to bottom, but though injured, it continued to grow. In 1880 the church was enlarged and rather than destroy the noble yew, it was removed 60 feet. The work was entrusted to Mr. W. Barron, of Derby, who took a great ball of soil with the roots, the whole mass weighing fifty-six tons. So well was the work done that, today, the tree is flourishing as well as ever.

THE BUCKLAND YEW, NEAR DOVER

In the churchyard of St. Andrews, this great tree has an interesting history. Having survived being struck by lightning in 1774, its trunk is now 22 feet in circumference.

A few days after my visit to the Buckland tree, it was my good fortune to behold and measure the venerable yew which stands in the church yard at Crowhurst, Sussex. It is some 40 feet in circumference at its base and measures no less than 29 feet in girth four feet from the ground, so it is not improbable that we were here looking upon a tree that stood before the Normans defeated the Saxons in the great battle that raged close by, and it may indeed have provided bows for the fray. The boughs are now well supported and it has recently been protected by an iron railing.

The famous giant yew at Ankerwyke near Staines is probably older still. In 1894 the trunk, three feet from the ground, measured 30 feet 9 inches round and it is said that Magna Charta was signed within sight of it, in the 18th year of the reign of King John in 1215. Mr. Francis, the head gardener, reported to me that the tree is still flourishing, but the girth remains about the same as when the last measurement was taken in 1894. It is quite probable that in this grand old ancient of days and in the aged monarch at Crowhurst we may have come face to face with a living thing, a thousand years of age.

When the Romans first came to Britain they found a well known line of communication along the North Downs. It was indeed the chief highway of the South and ran from the Straits of Dover through Canterbury to Salisbury Plain and Stonehenge, the great center of prehistoric civilization. From Salisbury an arm of the road was extended to Winchester and Southampton so that both Canterbury and Winchester became linked up with the Continent. Grant Allen has suggested that the Phoenicians and Romans used this track for carrying tin from the Cornish mines to the ports of Kent from which it was conveyed to Rome.

Till the coming of St. Augustin, the road was a commercial one, but with the rise of the Roman Catholic Church in Britain and the all prevailing saint worship the importance of a city came to be judged by the relics it possessed and above all by the presence of the shrine of some saint. Winchester grew wealthy by the crowds that flocked to the Shrine of St. Swithin, and Canterbury profited by the possession of the Shrine of the murdered Archbishop St. Thomas à Becket.

Today one can frequently walk along the old road on the heights near Guildford without meeting a soul, but for 400 years before the Reformation thousands of pilgrims passed along it especially during the Feast of the Martyrdom on December 29th and the Feast of the Translation on July 7th. It is recorded that on one occasion in the year 1420 no less than 100,000 pilgrims were gathered together, "some journeyed on horseback; some on foot, moving slowly along with music, song and merry tales, so that every town near the route came to be filled with noise, and with the sound of their piping and with the jingling of their Canterbury Bells and the barking of the dogs after them." So it came about that the section of the ancient road which ran over the high ground between Canterbury and Winchester came to be known as "the Pilgrims' Way." Parts of the old road are now absorbed in modern highways, parts of it are preserved in private parks and grounds, and some parts of it have entirely disappeared.

And now the question may be asked, what has this

(Continued on page 576)

The Brown Trout

By Ladd Plumley

ABOUT thirty years ago I was staying for a few days at the upper end of the Beaverkill River, in the Catskill Mountains. One evening a large trout was feeding on natural insects in a pool down at the foot of a meadow near the house. He would have none of my artificial fly. The air was filled with insects and I caught a big gray spinner, hooked it on my No. 12 fly and dropped it on the water. It was instantly gobbled up. After a brisk fight the fish was grassed and examined. Very different from the native brook trout, with which I was familiar, but I had heard of "German browns," as they were called in the valley of the Beaverkill, and knew this was one of them. It was a shapely, handsome fish, but not as dainty as our sleek vermilion-peppered native beauties.

THE BROWN TROUT IS A SPORT FISH EQUAL TO ANY. LACKING THE BEAUTY OF THE RAINBOW AND BROOK TROUT AND CURSED AS A CANNIBAL, HE HAS IN THE MIDST OF CIVILIZATION LEARNED TO TAKE CARE OF HIS SPANGLED HIDE

At that time anglers loathed the brown trout and cursed him as a cannibal, as a fish which gave no sport, wretched on the table and a nuisance generally. Today the brown trout, which scientists class as the *Salmo eriox,* closely related to the *Salmo fario* of Great Britain, is the most popular game fish in the Beaverkill River.

Let us compare the trout fishing, with which I was familiar forty years ago, with the fishing today in the Beaverkill, a stream which is classical among American trout waters. Here Henry Ward Beecher and his brother, Thomas K. Beecher, yearly came fishing. Earlier, Dr. Bethune, a noted New York clergyman, editor of the first American edition of "Walton's Compleat Angler," and Thaddeus Norris, author of the early compendium for anglers, "The American Anglers' Book," cast their flies on these waters. Here Joseph Jefferson came and filled his creel, as did the elder Dr. Van Dyke, with his young son Henry.

In the early days the Beaverkill was alive with brook trout; catches of a hundred a day were quite ordinary. But the fish were small. If you caught a pounder it was the prize of your season's catch. A two-pounder was something almost unknown and would be talked about for several seasons. Even a half-pound trout was a very big one, and if in a day's catch you had a few "ten-inchers" you would count yourself not only an able fisherman but a very lucky fisherman, indeed.

Today, from the Beaverkill you get very few native brook trout; your catch for the most part is browns, and large trout are common enough. In a pool close to the Beaverkill postoffice, brown trout as large as six pounds have been taken. Trout are by no means as plentiful as in ancient Beaverkill days, but the large brown fellows at times offer sport that would have almost crazed the former generation of Beaverkill fly fishermen.

The truth is that the brown trout of Europe is, by ancestry, an educated fish—a very highly educated fish. For more than two thousand years he has lived near cities and towns and has been fished for with flies and

IN THE COLD MOUNTAIN STREAMS OF THE CATSKILL MOUNTAINS THE BROWN TROUT IS FAST BECOMING THE MOST POPULAR GAME FISH, CHIEFLY BECAUSE OF HIS CUNNING AND ABILITY TO SURVIVE THE ELEMENTS. IN THE INSERT IS SHOWN THE BROWN TROUT, *SALMO ERIOX*, CLOSELY RELATED TO THE *SALMO FARIO* OF GREAT BRITAIN

bait. In the very midst of mankind he has learned to care for his spangled hide. He has discovered that an angleworm squirming on a hook is dangerous, and has learned never to show himself in schools in the main river or tributary brooks.

The Beaverkill is nowadays a typical brown trout river, and here you can study this fish. Near the village of Beaverkill is a mountain golf ground, and at the far end of the course is a clear brook filled with browns, but you would never know it. Walk up to one of the pools and look in. Three or four little brook trout lie on the sands, but there is not a brown in sight. Now the brown, although scorning the worm as ordinarily presented on a hook, will, when the water is muddy, take worm bait as if he were a sunfish. During a heavy thunder shower a friend of mine fished a quarter-mile of the brook when the water was thick with mud and filled a ten-pound creel with large browns. Just above the county highway, where automobiles are passing all the time, the brook had a duck puddle, perhaps fifty feet long and twenty feet wide. When the water was clear you could see the bottom everywhere and not a trout could be discerned, except a few small native trout. Yet this duck puddle was heavily stocked with big browns, and when the water was discolored you could take with bait any number of three-quarter-pound fish.

On the Pacific Coast there is the same prejudice among anglers against the brown trout that existed in the early days in the East. Yet, to some extent, the brown has been introduced in both lakes and streams of the high Sierras. There he is generally called the Loch Leven. But the true brown is more plentiful than the Loch Leven, and where he has been planted he is rapidly taking the streams for his own.

We hear a great deal about the passing of American trout fishing, but the introduced European fish is not passing; rather, he is increasing rapidly in every stream where he has been planted. The red fox of Europe came into America by escaping from a sailor, who brought a pair from England. They soon overran Virginia and drove away the native American fox. Today the latter

is almost unknown. The same thing is taking place where the brown trout immigrant has been introduced. He is driving away, very likely killing, both the brook trout and the rainbow trout. It is the story of the white settler and the Indian told over again in fins instead of flannel shirts and cowhide boots against buckskin, feathers and moccasins.

We often hear that the brown trout will survive warm water better than the native brook trout, and that he thrives where the temperature of the streams has been changed because forests have been cut away. But while it is quite true that the brown will do well in comparatively warm water, he also does well in the coldest tributaries to the warmer main rivers. There is an excellent example of this in the Beaverkill valley. A frigid stream which makes into the Beaverkill River at the village of Shin Creek, was at one time packed with brook trout. Today there are hardly any native fish, but during the summer months even the uppermost portions hold an astonishing number of big browns. They ascend to the very source of the stream, and several years ago I took a full creel of fine browns in a few hours.

I acknowledge that the American trout, both brook and rainbow, is a more beautiful fish than the brown; that the brown is the more difficult to take on fly and bait; that the American brook trout is far and away a finer table fish than the brown. I will admit that the "painted" fish hold for me a magic that no other sport fish will ever have. Remembrance shows a little clear brook, gurgling through thick woodlands, where, with sapling pole and angleworm, keeping my head low and dropping the bait into a pothole, I yank out my first trout, a fish so dainty, so sleek, so lovely; a "jewel" of a fish. Yet acknowledging this, I do know a sport fish when he is hitched to my dry fly and my tapered leader, and the brown is a sport fish equal to any. Moreover, he can take care of himself in the very midst of mankind and multiply and grow big.

The automobile now takes fishermen to places formerly remote and almost impossible to gain. Where at a trout hole you were once alone with the kingfisher, today you will probably find a campmeeting gathering of anglers. Very likely you will run into several auto camps within a hundred yards of the spot where you hoped you would be alone with your pipe and rod. Three years ago at a public auto camping ground on the Esopus River, in the Catskill Mountains, I crawled on hands and knees to a shaded rocky pool. It was toward evening and the air was filled with the odor of frying bacon; children were playing just beyond the pool. No less than a dozen cars were parked at the camp ground. I dropped my Queen of the Waters just where a fall of a few feet churned into the pool, and instantly I was fast to a big brown. It was a notable fight, and before it was over there was an audience of some dozen or more men, women and children. Curiously enough, a motorist by the name of "Brown" aided me in landing my brown trout, a two-and-one-half-pounder.

Now, can you believe that if the brown trout had not been introduced into the Esopus we would have good fishing in that river today? A river which flows directly through many large towns; a river paralleled by a railroad and by a magnificent driveway, where cars are passing in an endless procession day and night; a river where you are never away from civilization, where at every turn you see artificial pools in which anywhere from a dozen to twenty people are bathing. If in such a river, less than a hundred miles as a crow flies from a city of five and more millions, you can find excellent trout fishing, it seems to prove the contention of many anglers that the brown trout of Europe is destined to solve the problem which we must acknowledge confronts the American trout angler.

Dream Fishin'

By JOSEPH BUCK

Just back from two weeks' campin' on the shores of Lake O'Rills,
Where the fightin' bass and muskies gave my city soul *some* thrills.
And gee, men, but this town is hot! It seems almighty small
And the air around this thirteenth floor ain't got no pep a-tall!

I work like blazes when the keen-eyed boss is hangin' 'round—
But when he goes, this office room becomes my fishin' ground;
My pencil turns to bamboo rod, the sharpener to reel,
My envelope's my landin' net, the letter tray my creel.

These figure rows are finny beauts that dive and dart and splash,
And when I sometimes get 'em wrong—why, that's the old backlash.
And if the boss my dreamin' notes and docks my weekly pay—
Well, sports, you know the answer—*that's* the whale that got away.

Pines of Progress

The Story of the Great Southern Lumber Company's Industrial Community Founded on Faith and Action in Growing Forests

By G. H. Collingwood

WE were traveling from Franklinton to Bogalusa. The little Ford rattled contentedly on the smooth gravel road, and I had an opportunity to view the landscape. My guide and companion was Delos Foil, a tall, broad-shouldered son of that part of eastern Louisiana known as the "Florida" parishes. As forest ranger for Washington parish, he represents the Louisiana Department of Conservation. The enthusiasm with which he discussed his work showed that it is more than a job—it is his vital interest.

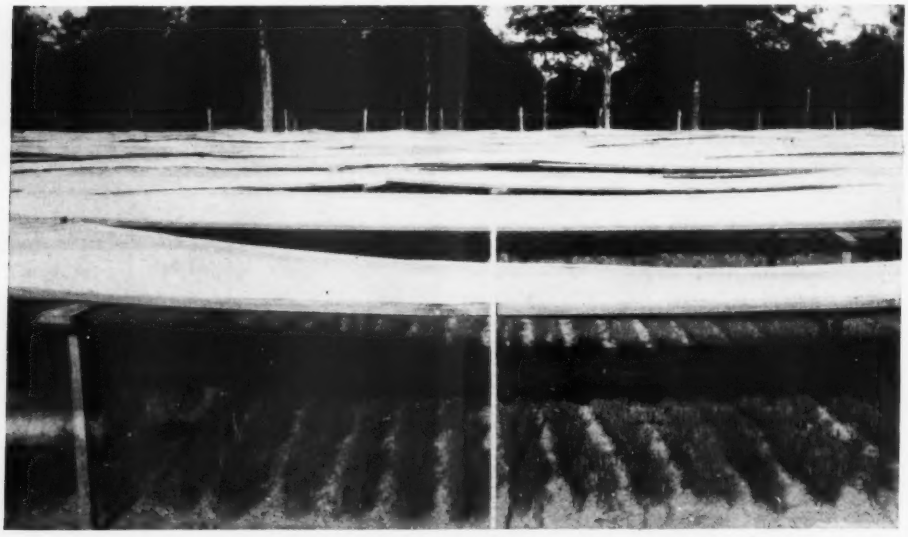
We were passing through what had once been a great forest, cut over during the past ten years. Here and there we saw a tiny farmhouse, whose wide hallway reached back to the kitchen and took advantage of any cooling breeze. As we neared Bogalusa it seemed that more and more of these little homes were painted. These signs of prosperity and pride of ownership were comparatively rare, and I remarked on them. Delos replied that Bogalusa offers a good market for farm products, and that the company pays cash for work in the woods or in the mill.

"When the planting season is on, most everybody can get work," he said, in his slow-spoken way. I soon learned that he referred to the planting of pine seedlings in thousand-acre lots, as carried on by the Great Southern Lumber Company. There are now 16,000 acres of these planted lands. During December and January school boys help in the planting during spare time, and the money earned means much to their families. Boys get $1.50 a day for planting, and when a boy is large enough to do a man's work he commands $2.00. "Those who have worked on a planting crew," Foil added, "are always the best fire-fighters, and the idea spreads from them to their friends and neighbors."

THE KIND OF FOREST THAT IS BACK OF BOGALUSA

A typical stand of longleaf pine—a renewable resource and the basis upon which other perpetual operations, similar to the industrial community of the Great Southern Lumber Company, may be built.

As we hurried along I found that I was looking for the white signs that told how far we were from Bogalusa and how far we had come from Franklinton. But my interest was in the thoughts expressed on these signboards rather than in the miles we had traveled. We were in a cut-over country, and here and



PINE SEEDLINGS

These youngsters are six weeks old and training for the fight to reclaim cut-over land near Bogalusa.

there we saw places where fire had swept some years before. As if to express my own thoughts we passed a sign, which read: "Bogalusa 24 miles—The Devil laughs when forests burn." We hurried along and I read: "Industries Mean Payrolls," and a little farther: "Payrolls Mean Prosperity." I turned to look at the opposite side and read: "Forest Destruction Goeth Before a Nation's Fall."

Presently the road carried us into standing timber. Delos proudly called my attention to the size of the trees and told me that the forest stretched back for over ten miles. It gave me an idea of the magnificent forest which once covered the eastern Louisiana parishes. Local rumor reported that the company would cut this tract among the last. I had learned by this time that always "the company" referred to the Great Southern Lumber Company, which owns most of the land for miles around and is largely responsible for the growth and prosperity of Bogalusa.

Here a new sign met my eye: "If Fire is Necessary. Make it Here." Close by was a great fireplace of rough stones, held together with white mortar, with evidence of fires which had been there. My friend Foil told me that on cold mornings travelers and workmen often stopped by the roadside to build a fire. Too often they neglected to put it out before leaving. To prevent the possibility of disastrous results, the company built these fireplaces from stones along the roadside, and the cost was not over $10. They consider it a form of economical fire insurance.

Long before this my attention had been called to the strange tropical appearance of scattered tree tops against the horizon. These were seed trees, which had been left after the last cutting operation. A Louisiana law requires two seed trees to the acre after cutting, but the company figures that they can afford to leave more than this. The advantage is twofold. More trees mean more seedlings and also a larger cut when the crews come back for the second operation. Seed trees do not need to be large, which fits with the company's conclusions that they cannot afford to cut trees less than 10 inches in diameter.

Presently we turned through a gate and followed an abandoned railway grade across a big pasture. I didn't see any stock, and the 39-inch woven wire fence was hogtight and topped with a strand of barbed wire. Apparently, only cattle were allowed within the enclosure, and few of them. Delos told me that the fence is typical of that which encloses the 16,000 acres

"RUNNERS-UP"

These young longleaf pines are twelve years old. They will fill the ranks of their forefathers,—harvested and turned into lumber.

of planted land. The combination of a man-planted forest surrounded by a well-made fence has created a new interest and sense of forest values in the minds of the local people. The net result is that during the past year fire has burned only 100 acres within these enclosures, and during the five years since planting has been carried on, less than 250 acres of planted land has been burned.

There were seed trees everywhere and few evidences of recent fires. When we stopped the car to walk about, I found much that I had taken for grass was little tufts of long-leaf pine. The ground was covered with them. My ranger guide showed me how these seedlings took two or three years to get out of the grass. All this time they seemed to be getting their roots deep down into the ground—long, fleshy roots that the razorback hog loves to burrow for, which explains the hogproof fence. After three or four years the little long-leaf pine lifts its head out of the grass. And then it fairly shoots! Everywhere round about were the evidences. Like skyrockets, they carry the idea of speed.

Where natural reproduction failed, the company planted, but nearly everywhere nature was demonstrating its ability to reclothe these acres if fire and hogs are kept out. Of course, seed trees are necessary, but we were frequently surprised to see good stands of young trees far away from any parents.

Who is responsible for all this? That was constantly in my mind, and finally I expressed it to Delos Foil.

"Oh, I reckon that Colonel Sullivan is the man behind all this. You ought to hear him talk. He says that Bogalusa has just started, and it's all going to be built up on the forest. Colonel Sullivan has worked this thing out in the woods, through the wise selection of foresters, rangers and fire patrolmen, who have been able to enlist a great amount of cooperation on the part of country people living contiguous to the lands under reforestation."

THE VANGUARD OF THE BOGALUSA ARMY

These young pines of progress occupy thousands of acres. They are the replacement forces of the Great Southern Lumber Company,—being second-growth longleaf coming in naturally as a result of fire protection.

By this time we were entering Bogalusa, and I recalled a sign which I had seen somewhere along the road: "Our Ideal—Bogalusa, the Capital of the Green Empire."

We drove along wide, graveled streets, shaded with

trees of sycamore and river birch, which partially screened the pleasant homes. The "Pine Tree Inn" was our goal, for here we would spend the night before getting acquainted with this bustling little city, which in less than twenty years has grown out of the "piney woods."

Scarcely a city block from the inn, on a piece of land where Bogalusa's civic center may some day stand, is the forest nursery. A signboard as large as a cigarette advertisement calls attention to this enterprise of the company, where four million pine seedlings are growing. Tier after tier of seedling beds extend back to the fence. Here are slash, long-leaf, loblolly and short-leaf pine seedlings, all in separate beds, and a few beds of cypress seedlings. The nursery always wakens the admiration of foresters from the North, for in less than a year seedlings are grown to a size comparable with four and five year old transplants from a Northern nursery. Climate, soil and labor conditions, combined with good management, have made it possible to produce these seedlings, pack them and transport them to the planting site for 69 cents per thousand.

Men with plows are sent ahead to furrow the ground every eight feet, and the seedlings are planted six feet apart in the furrows. This requires about 900 seedlings to cover an acre. The total cost of planting, including the trees and labor of setting them out, averaged $3.42 an acre during the last planting season. The results are gratifying to everyone connected with the work, for during the past three years 85 to 90 per cent of all seedlings planted are alive and growing.

A COLD WASTE-BURNER

The Great Southern Lumber Company has put out the fires in this burner forever by finding means to use completely what was formerly burned.

As proof that this is a going part of the company's operations, I learned that Mr. Johnson's men are planning a big seed-gathering campaign during the fall of 1927. Long-leaf pine gives promise of a crop of cones comparable with the big one of 1921. With seed crops that come intermittently every three to seven years, the crop has to be taken advantage of when it comes. Accordingly, they anticipate gathering enough long-leaf pine cones to thresh out nearly three tons of clean seed. During previous years they have gathered these at 50 cents a pound, and indications point to similarly satisfactory results this year.

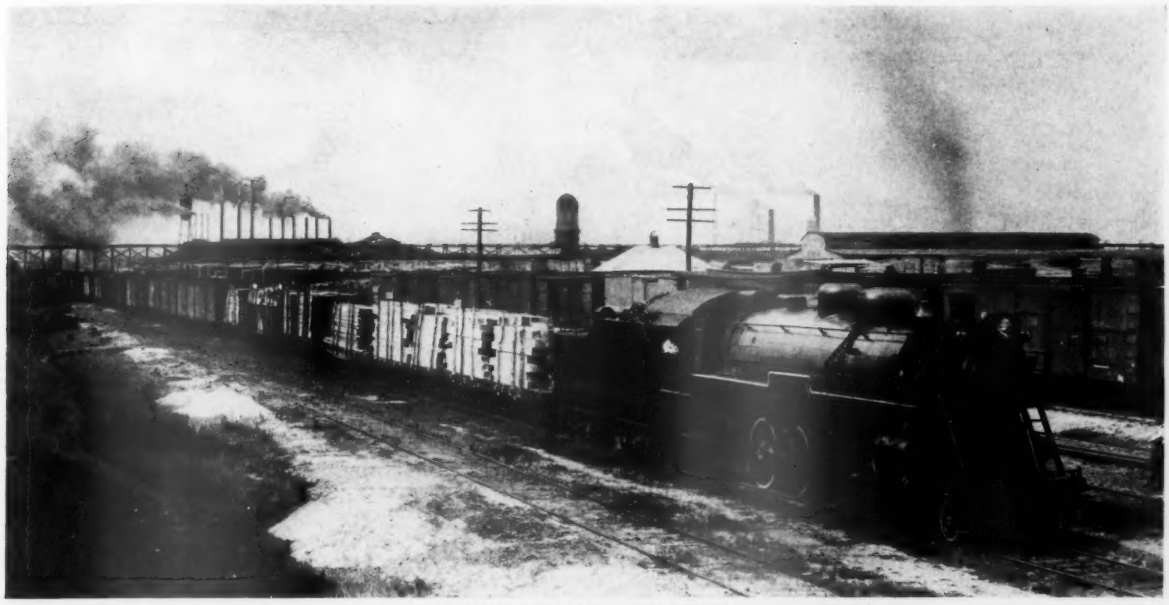
The mill was our first objective after breakfast the next morning. It is the largest sawmill east of the Mississippi River, and easily one of the largest in America. Built with a capacity of a million board feet a day, we found the men working on the comparatively restricted daily output of three-quarters of a million board feet. To satisfy this voracious appetite, the woods crews on company lands in Louisiana and Mississippi cut the timber from about 50 acres every day. As a matter of fact, during many days they cut more than this in order that bad weather or accidents may not hold up the mill. Log trains were busy in the yards, while men rolled their cargoes into the mill pond.

Most of the logs were over twelve inches in diameter at the small end, and many were twenty-four to thirty inches across. We watched the men with long pike poles guide these logs to the bull chain, where they crawled up into the mill.

Out of the brilliant Southern sunlight we entered the mill. Our eyes were slow to adjust themselves to the dim interior. For an instant the logs seemed to have assumed the power of self-destruction—or, more properly, self-direction. The men directing the electric-driven saw carriages were hidden in the dusk. The eye caught only the movement of the carriages traveling back and forth, like giant shuttles. Logs rolled into place or jumped over to present a new side, and then moved irresistibly toward the saw. This was only for a moment. Then I saw the part that men were playing, for there were head sawyers and tail sawyers and offbearers and all the force that one finds in a well-organized mill.

Further along a score or more of black men kept keen watch for pieces large enough to be worked into handles or box boards. Most of the waste was carried on moving belts. One might imagine it was going to a waste burner. But not here! Great "logs" chipped up the wood and carried it to immense digesters four stories

high. Here it joined the chips that were made from limbs and small logs hauled from the woods, for they boast that the paper mill uses the waste of woods as well as mill. Further along a comparatively small amount of waste paper pulp is mixed with the wood pulp. This is made from waste paper gathered in the business offices of New Orleans and shipped to Bogalusa by the carload. Out of this mixture of old with the new the paper mill turns out a good quality of kraft paper.



THE FOREST GOES TO MARKET

A train loaded with forest products leaving Bogalusa for northern points. And while it travels trees are growing to load it up again and again.

A paper bag factory near by uses tons of Bogalusa paper. Some is shipped to stores and markets to wrap packages of merchandise, and an increasing amount is made especially heavy to line buildings. But the offices of the company take keenest pride in their business stationery, which is of their own paper, and every sheet bears the slogan: "Bogalusa Kraft Paper."

But paper is not the only salvation of the efficient managers who have planned these operations. There are factories near by to manufacture boxes, lath and broom handles from the sound pieces of board or slab trimmed off in the mill.

For two years before a stand of long-leaf pine is to be cut the trees are boxed for turpentine. The crude gum is shipped to a turpentine still in Bogalusa. A special equipment in this still makes possible the extraction and utilization of gum from "fat" butts and "light wood." A valuable product is thus secured, and the de-gummed boards are made more generally usable.

In spite of careful woods management some small trees are cut. And every tree has a top end too small to go into boards. Recently a timber treating plant has been installed to creosote these for fence posts. The same plant is equipped to treat bridge timbers and other construction material which may be susceptible to attack by termites or dry rot.

Of course this is all very wonderful you say, but no sawmill is run without terrific waste. That is what I said, and as we rounded a corner of the plant I saw the big black screen covered refuse burner. I was on the point of saying "There, I told you so!" when I saw bold white letters on the black sides of the burner. Surely this sign painter was everywhere, like a college freshman in his efforts to decorate the academic water tank. And then I walked around to where I could read:

"Bogalusa
Plant of
Great Southern Lumber Company
Refuse Burner

Born October 1, 1908.....Died July 4, 1924

Every day during my life of sixteen years I consumed daily 560 cords of waste material or a total of 2,688,000 cords.

I cost $75,000 but my fire has destroyed $1,344,000 worth of what was formerly considered waste.

The complete utilization of the sawmill refuse in the manufacture of paper has my fire forever extinguished."

So here it was, all before me. I was forced to believe. Here was a great corporation applying to lumbering some of the principles that Armour and Swift have applied to the business of packing meat. They had reduced their waste to a point where they lost only the whisper of the wind in the tops of the pines, and the squeal of the saw as it tore into the logs. And best of all from the point of view of the forester and conservationist they are managing their woods so as to reduce fires to a minimum. With fire excluded, their plan of cutting insures a second crop of pine timber and the ideal of sustained annual yield is in a fair way to be realized.

RISING TO THE OCCASION, BRUNO BEGS FOR SUGAR

The Bandits of Yellowstone Park

By Mildred G. Durbin

"ON THE road that we travel tomorrow, the bears will come out of the woods, stop our car, and stand on their hind legs begging for sugar." So said our driver in Yellowstone National Park.

Did we doubt his word? No indeed. That very day we had seen fountains of scalding water, boiling pools alongside icy trout streams and a hot pool that sucked our "hankys" down its funnel-shaped throat and returned them to us clean. Why should we doubt a little story about hold-up bears?

In the morning, with loaf-sugar in our pockets commandeered from the dining room, and looking forward to our high adventure, we climbed into the car.

Our first stop was near the Keplar Cascades, where we all got out of the car to see a foaming white stream tumbling in the depths of a pine-covered canyon. But no bears molested us.

Beyond, the road wound through dark pine forests, up and down hill and twice across the continental divide. Here were perfect homes for bears. We even saw a pile of rocks which our driver said was a bear den where bears hibernated. Some of the crowd called out: "I thought you said we would see bears!" "Where are the hold-up bears?" "Oh, you were just joking!" To all this our driver smiled and kept his eyes on the smooth, narrow road, but he must have thought he had a crowd of over-grown children instead of school teachers, office folk, doctors and bankers.

When nothing developed and we had about given up seeing bears, he suddenly and noiselessly stopped the car. Mr. Black Bear, fat, sleek and glistening in the sun, ambled from the forest, his nose keened toward our car. "Don't get out," hissed the driver. "They are not tame."

Cameras clicked as Bruin came toward us. Sure enough! At a command from one of the sugar-mongers, he reared on his hind legs and continued to beg as long as he was rewarded with sugar. As we

INSISTENT WERE THE DEMANDS OF THE "MAMMA BEAR" AND HER TWO CUNNING CUBS

THE LARGE AND LAZY HOLD-UP ARTIST WHO SIMPLY SAT IN THE ROAD AND EXPECTED HIS PLUNDER TO BE BROUGHT TO HIM!

had faith enough to believe we would see other bears, we saved some of the sugar. He wasted no more time on us, but ambled to the next car.

We drove on, and in a few minutes our car stopped again to meet the demands of a nice, large mamma bear and her two cunning cubs. Driving on for a little, we stopped once more. This time Bruin was huge and lazy. He simply sat on his haunches in the ditch, waved his nose at us and waited for us to come to him. He did not get up for the sugar that was tossed to him, but raked it in with his paws.

Not far beyond, Mr. Cinnamon Bear came to meet us. Most of the sugar was gone, but my companion had a few pieces left. She fed him, and then carelessly let her hand hang over the side of the car. Mr. Bear wanted more sugar, but could not distinguish between sugar and fingers, so we spent the next half hour at a ranger station, where first-aid for the lacerated fingers was given.

The rangers told us that the black, cinnamon and brown bears are the blondes and brunettes of the same family.

In this part of the park are numerous signs warning motorists not to leave food in their cars, as the bears, in their avidity for sweets, are likely to damage the cars in their efforts to get it.

Garbage from the hotels and lodges is taken to a dump a half mile away, and after each meal it is quite the thing for tourists to make a trip to the dump after dinner and watch the bears feeding. The rangers continually warned us not to pet or tease them. They are gentle if not molested.

At dusk at the Canyon Hotel dump we had the good fortune to see eight huge grizzlies. As these animals are very timid, we stood at a distance and conversed in whispers.

The animals seem to sense their own safety, as all wild life is protected in Yellowstone Park. This fact makes possible the unique experience of close approach to bears and other animals one might hate to meet outside park boundaries.

THIS YOUNG CUB IS LEARNING THE JESSE JAMES ACT FROM A PARK RANGER

A Stranded Company

By Frank Thone

"For the End of the World was long ago,
And all we dwell today
Like children of some second birth,
Like a strange people left on earth
After a judgment day."
—Ballad of the White Horse.

WHEN the vast ice curtain of the most recent glacial age came slowly creaking down out of the North, it brought a final exit to many of the actors in the ancient drama of the earth. Mammoth and mastodon, saber-tooth and wooly rhinoceros, trooped off to return no more. The Third Act, the Tertiary, had given them their last cue. Others, including the most recent addition to the cast, that odd two-legged creature who still walks dazedly through the show as if he were not quite sure whether or not he belonged to it, were crowded southwardly backstage, until the curtain should go up again for the beginning of the Fourth Act. When it did go up, and the company came forward again, there were little groups and knots of it left here and there in odd corners of the southern lands and there they still remain, strangely alien to their nearest neighbors, and sometimes indeed with no sister-members of the old cast to represent them in the action now going forward up front. If one can find one of these isolated little relict groups, one can get a most illuminating glimpse of what things must have been like during the long interlude of the Pleistocene, when Baffin Land came to Michigan, and Michigan was perforce obliged to make way by retiring to Florida.

SHRUBBY MAGNOLIAS, WITH HUGE CREAMY FLOWERS, GROW WITH TROPICAL ABUNDANCE AT THE UPPER EDGES OF THE RAVINES

TORREYA AT THE EDGE OF A CLEARING BY A WET CREEK BOTTOM. A SEEDLING IS GROWING IN THE FOREGROUND

Northern Florida is full of such little knots of stranded actors, some of them of companies that have gone North again, some of them left quite alone in the new world, in which they have not been able to find new parts. Of these, one of the most interesting is to be found along the east bank of the Appalachicola River between the towns of Chattahoochee and Bristol, where high bluffs of soft red sandstone, overlain with the yellow sand familiar throughout the Gulf Coast region, are cut into steep little creek valleys and deep, canyon-like ravines. Under the high trees that keep these ravines always dusky and moist and cool there is one of the strangest stranded troupes to be found anywhere on this planet.

Asa Gray once made a journey to see this place, and his "Pilgrimage to Torreya" is one of the classics

of early American botanical literature. What went Gray out into the wilderness to see? Two trees. One, which he knew as *Torreya taxifolia,* is now called *Tumion* by a generation of botanists who serve gods very jealous of priority, and is more familiarly known as Savin, or occasionally as Stinking Cedar, to the natives of the region where it grows. It has two kindred species left in remote places, one in California, the other in Japan and China. The other is a yew, *Taxus floridana,* which looks for all the world like the common shrubby yew of the North, and was undoubtedly at one time a part of the same species, but now, isolated in this one little patch for many millenia, has had time to develop a distinctive character of its own.

Grouped around these two central characters there are a number of others, not so much alone in the world, yet whose affinities are distinctly of the North. There are spring flowers there that remind one strongly of the woods of Ohio or Michigan; bloodroot, hepatica, toothwort and the like. There is a trillium, too, and although that is a distinctly southern species of the plant, it somehow seems to fit in with the northern atmosphere. Witch-hazel is a prominent shrub on the slopes, and there are a few specimens of mountain laurel in the region, reminding one of the Appalachians.

The big forest trees are hardwoods, contrasting sharply with the pines on the sandy plateau of the bluff-tops into which the ravines run their branching fingers; and though a close examination of their species would show them to be southerners, the genus-list has a suggestively northern sound: oak, hickory, maple, tulip-tree. Sweetgum stretches south perhaps more than north, and magnolia of course is distinctly southern. But taken all around, a Yankee feels less like an alien in these ravines than he does anywhere else in Florida, save perhaps in a few spots around Tallahassee, where he may find in one place a lake shore with an elm forest and an undergrowth of gooseberry

MIXED HARDWOODS MAKE UP THE FORESTS THAT SHELTER TORREYA AND FLORIDA YEW—THOSE STRANDED ACTORS OF THE BOTANICAL WORLD. THOUGH UNMISTAKABLY SOUTHERNERS, MANY OF THE TREES HERE REMIND ONE OF THE NORTH

bushes, and at another a flat creek bottom supporting a strange mixed forest of magnolias and beeches!

The northern "feel" one gets in these Torreya ravines is confirmed by an investigation of their insect life. Two entomologists from the University of Florida came up out of their first plunge into them somewhat goggle-eyed. Whereas the insects of the sandy upland pine forests had been orthodoxly Floridian, with even an Antillean flavor, there were insects in the ravines that had never been reported south of Kentucky, Indiana, even Michigan, and one of the men discovered one or two species that were apparently as local to the region as are the Torreya and the Florida Yew themselves.

HEPATICAS, AMONG THE DEAD LEAVES, GIVE A DISTINCTLY NORTHERN LOOK

Torreya, as its specific name *taxifolia* implies, has leaves more or less like those of the yew; they are stiffer, however, and more sharply pointed, and their color is a dark and glossy green above, paler underneath. The genus is not only yew-like in appearance, it is closely related to the yews, and is included by the systematists in the *Taxaceae*.

The trees—or rather bushes, for there are practically no large trees left—are very abundant. They are not uniformly distributed throughout the area, but where you find them at all you find them by the scores and hundreds. They are far more numerous than their relatives and neighbors, the Florida Yew, outnumbering them perhaps two or three hundred to one. This may be partly due to their free coppicing habit, for every stump where one was cut down is surrounded by a clump of healthy sprouts, and every down sapling, prostrated by the rushing little brooks or by the frequent landslips of the loose soil, has a row of prosperous-looking shoots growing all along its trunk. The larger trees have been pretty well cut away, but stumps indicate that they existed until recent years, and reached a diameter of as much as a foot. A few surviving specimens on creek flats were thirty or forty feet high. A sawmill boss in the neighborhood stated that he had a number of one-inch Savin boards eleven inches wide, and added that the wood had been popular for the making of cedar chests. Its nickname of Stinking Cedar would seem, therefore, to have been no handicap; and indeed it is quite undeserved, for the odor of the tree is pungent, but not fetid.

The oriental species of Torreya have been introduced into cultivation in this country as ornamentals, and there is no reason why this native one should be neglected. It is grown to some extent in northern Florida towns, and would probably prove hardy at least as far north as Washington and St. Louis. In its natural shaded habitat it has the open, branching habit of a yew, but a number of them growing along the upper edge of one of the ravines, where the timber had been cleared to make a pasture, have developed a dense, bristling, bushy form that promises well for hedge purposes. So long as the bushes, and the stumps of the trees that once were, are left undisturbed in their ravines, the Torreya and Florida Yew will have a good chance for their lives. But the surrounding uplands have been pretty well lumbered off, and the local sawmill men may at any time turn from upland pine to the big hardwoods in the ravines, at present being left alone because of the difficulty of getting them out. The shelter of these hardwoods is apparently essential to the survival of these almost extinct American tree species, for they are never found outside the ravines, and the moisture of the atmosphere and the exact tilth of the soil maintained under the canopy of the hardwoods seem to be conditions they can not do without, at least while they are struggling seedlings. The lands are privately owned, but are not valued for anything beyond their timber.

The beginnings of a "forest consciousness" in Florida, as reported in AMERICAN FORESTS AND FOREST LIFE recently, are most gratifying. Naturally, the chief energies of this campaign will be devoted to the rehabilitation of the magnificent forests of longleaf pine and other economic species that once were the pride of the state. But it is perhaps not too much to hope that before it is too late the friends of trees in Florida will turn their attention to these unique possessions of theirs, and that this area will be acquired either for public ownership or for the custodianship of some association which will do for Florida on a small scale what the Save-the-Redwoods League has done on a large scale, so successfully and with much gigantic necessary labor, for the State of California.

There is no spot on earth which may not be made more beautiful by the help of trees and flowers —Oliver Wendell Holmes.

Exotic Trees for Forest Plantations

By Warren H. Manning

THOSE who are interested in economic and ornamental forest plantations and in the development of landscape may well give more attention to the value of certain exotic specimens that have proved themselves hardy and reasonably free from disease, and that also have a rapid upright growth.

With Mr. Herbert M. Blanche, and Mr. W. J. Mitchell, of the Finger Lakes Park Commission, I found a fine specimen of *Cryptomeria japonica* at Aurora, New York, near Well's College, that is illustrated herewith. The tree was between two and three feet in diameter, about seventy feet high, and, in our judgment it was about sixty or seventy-five years old. During this period it seems to have made quite as good a trunk for forestry purposes as can be secured with any other tree that we saw growing in the vicinity. There were white pines, not far away, that did not have as tall and clean trunks. Furthermore, this tree was in an open field. It apparently had shed its branches naturally in such a way as not to leave bad scars or knots.

Cryptomeria japonica is also growing on the top of Hemlock Hill in the Arnold Arboretum and appears to be quite hardy and vigorous. As yet the plants are not over twenty feet high.

The Cedar of Lebanon is another upright growing exotic of which there are some particularly fine specimens, such as the large tree at Flushing, New York. This tree is likewise growing on the top of Hemlock Hill in the Arnold Arboretum, and appears to be quite hardy under favorable conditions, its straight trunk giving promise of valuable timber.

We also found at Moravia, New York, near the house of Dr. Frank Atwood, one of the Finger Lake Park Commissioners, and a botanist of distinction, a fine specimen of the southern cypress, about eighteen inches in diameter, and thirty feet high. Another tree of this species is on the Brooks estate in Brookline, Massachusetts, and it has a diameter of two or three feet, and a height of seventy to eighty feet, with a tall, clean, straight trunk. Mr. Secrest, the State Forester of Ohio, has been experimenting with this cypress in his forest plantations at Worcester, Ohio, under various soil conditions, and assures me that it has real values as a forest tree in a variety of soils.

THE FINE, CLEAN STEM OF THIS EXOTIC, *CRYPTOMERIA JAPONICA*, SEEMS TO JUSTIFY THE USE OF THE SPECIES FOR FOREST PLANTING

A tree that seems to me to have promise for forest plantations is the Japanese ginko or maidenhair tree. It is grown successfully in the streets of Washington and elsewhere as a street tree, and now and then specimens with a trunk two feet in diameter, and forty to fifty feet in height, are found. It has a tendency to branch freely, which probably would be corrected in close plantations. There are enough seeding trees here in America to give a considerable stock for planting, and undoubtedly additional seed could be obtained in quantity from Japan without difficulty.

Norway spruce has been planted widely in years past about farm houses, over much of eastern North America. It grows rapidly, produces a straight trunk, but it holds

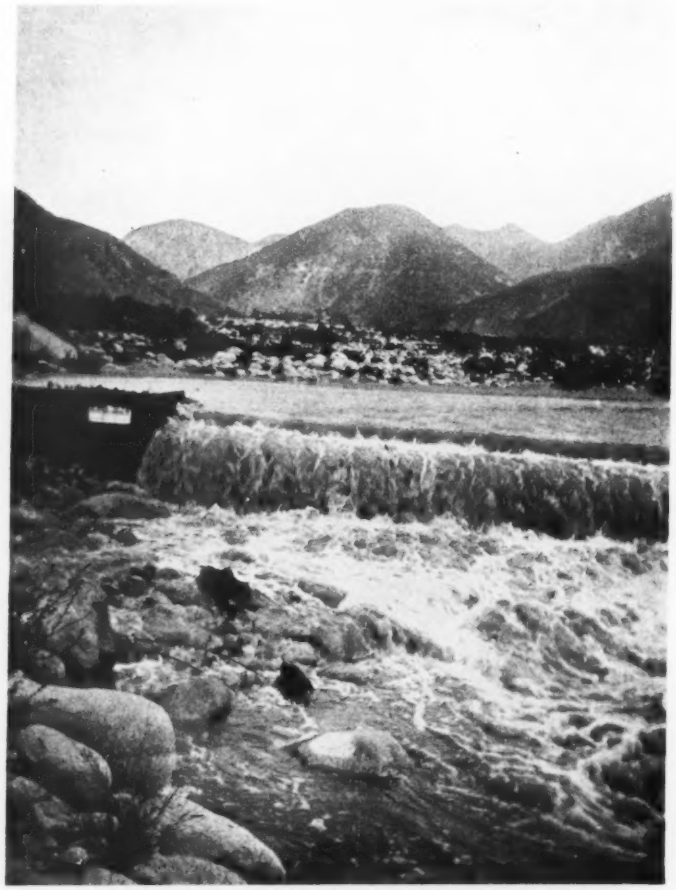
(*Continued on page* 568)

Water is King in California

By Francis Cuttle

ONE need only walk or drive along one of the main irrigation canals in any county in southern California and compare the brown, barren land above the canal that has no irrigating water with the luxuriant vegetation below the canal to realize that water is king in California. Fruit trees, alfalfa, flowers, vegetables, practically everything that can be grown throughout the temperate zone is found there.

The value of land without water and land with an adequate, dependable supply, ranges from a few dollars an acre up to several thousand dollars an acre. Stress is laid upon an *adequate and dependable* water supply for the reason that the high value of land has lead to many abuses. Promoters of land schemes have frequently imposed and are still imposing upon the uninitiated by selling lands without a dependable water supply, which the purchaser frequently discovers to his sorrow and loss to be practically worthless. The result is that his investment is lost and he becomes hopelessly entangled in a scheme with little or no possibility of making good.



DAM FOR DIVERTING WATER FROM MAIN CHANNEL OF SANTA ANA RIVER

This structure is built of stone and woven wire fencing which diverts water from the main river, so that it may be spread and allowed to sink in the gravel on the debris cone at the mouth of the canyon.

Naturally, all of the flowing water in the streams was appropriated years ago and has been the subject of bitter and expensive litigation to determine who should own and control these valuable water rights. The so-called "riparian" doctrine of water rights has led to much confusion, as owners of land lying along rivers and streams have frequently claimed all of the water of such streams which flows past their property, and have maintained that it should be undiminished in quantity or quality, except by other riparian proprietors. In many cases the courts have upheld these contentions. This has prevented the best use of the water of the State up to this time, but the legislature of California has adopted a resolution which provides for a constitutional amendment to be voted upon by the people of the State at the next general election which, if adopted, will protect the rights of riparian proprietors to water for their lands up to the amount these riparian proprietors can use beneficially. The remainder of the water in the streams will be under control of the State and subject to appropriation under State law. If this constitutional amendment is adopted it will bring about a much better use of the water than has been possible up to the present time and will probably mean an extension of its use for domestic, irrigation and power purposes.

When all of the water of the streams was appropriated and put to beneficial use, resulting in profit to those who were fortunate enough to secure rights, other means were sought, and the development of underground water began about 1883. Up to that time shallow artesian wells of two or three inches in diameter had been sunk and water secured for domestic purposes. This method was extended by the boring of wells ten and twelve inches in diameter to depths ranging from a few hundred feet to one thousand feet, and flows of water

were obtained up to as high as three thousand gallons per minute. Large areas of land were planted as a result of this development, but still there was a cry for more water.

MEASURING WATER IN DIVERTING CHANNEL
This is on the Santa Ana River where water is being spread over the debris cone.

With the advent of hydro-electric power and the discovery of fuel oil in California, began the pumping of water from wells sunk in the river beds. There are now thousands of pumping plants operated by electric power, gas and crude oil engines. With all of these draughts upon the supply it was inevitable that the use in some localities would exceed the natural water crop, as the water secured from streams, artesian wells and pumping plants all came from local watersheds.

With the lowering of the water plane, those charged with the duty of maintaining a water supply for municipal and domestic use and for irrigation sought means to store and save water that ran to waste during wet years and during the annual rainy seasons. Unfortunately, there are few natural sites for surface reservoirs. Wherever this can be done to good advantage, dams are built and reservoirs created. The cost of storing this water ranges from sixty dollars per acre foot up to several hundred dollars per acre foot. The available storage reservoir capacity, as a whole, is not sufficient to hold the maximum flow of the streams.

As a further means of preventing waste and holding water for beneficial use, storage in underground strata was begun about 1910. At first the proponents of this method were looked upon as visionary, and the public was inclined to be skeptical as to results which might be obtained by the turning of water out of the streams and sinking it in underground gravel. A notable instance of the success of this method is the work being carried on by the Water Conservation Association in the con-

INSPECTING A CONTOUR DITCH
The Water Conservation Association has six miles of these ditches for spreading and conserving flood waters.

servation of water in underground strata on the debris cone of the Santa Ana River. This river has a mountain drainage area of 460 square miles, and the maximum seasonal flow is 720,500 acre feet, while the minimum seasonal flow is 66,200 acre feet.

ANOTHER DIVERTING DAM

The volume of water shown here would be much greater if it were not for the ditch constructed to carry flood waters out over the gravel so they may sink for underground storage.

The Water Conservation Association acquired title to several thousand acres of land and has secured additional land by an Act of Congress, which set aside these lands for the purpose of conservation of water. The plan now in use is the diversion of water from the main channel by means of dams, then through contour ditches running at right angles from the main stream onto dry areas. The water is then distributed in small channels and sunk in the gravel in a manner somewhat similar to the flooding of land for irrigation. This water travels underground to replenish sources of supply lying below the debris cone upon which it is sunk. The elevation is about five hundred feet above the San Bernardino artesian basin and approximately five miles distant. The water travels underground at the rate of about one to one and one-fourth miles a year, so that the effect of storing in underground strata is not immediately apparent. In 1922 there was sunk on this debris cone about eighty thousand acre feet of water. This was followed by three years of less than normal rainfall, during which time the water plane in southern California lowered. During the same time the water plane in and around the San Bernardino artesian basin showed a rise of six and eighteen hundredths feet, notwithstanding the fact that there had been additional draughts on underground water from this area during the dry years. This proved conclusively that the storage of water in underground strata had been successful, and the method is now being put into effect in many other regions in California.

The cost of storing water in gravel is only a very small percentage of the cost of building surface reservoirs. So far, the capital cost for this storage has been approximately $1.55 an acre foot, while the actual cost of spreading the water amounts to about ten cents an acre foot. When it is remembered that the cost of water storage in surface reservoirs ranges from sixty dollars up to several hundred dollars an acre foot, the advantage of underground storage is apparent. One of the greatest difficulties to be overcome in underground storage is the prevention of brush burning on the watersheds from which the water is secured. Where this occurs there is great erosion of burned material, silt and sand, which, if carried out onto the gravel where water is sunk, fills it up, thereby preventing the successful carrying on of the work.

During the past season the federal government has been convinced of the importance of the protection of these watersheds and is appropriating money for the construction of fire lanes, trails and lookouts. These amounts are matched by the State and local interests.

Few people outside of the areas where this water is used can realize its enormous value when used for irrigation of the intensively cultivated agricultural and horticultural lands of southern California. Two acre feet of water will irrigate one acre of orange grove. This acre will produce on an average of 400 boxes, which sell on the Eastern market at approximately $5 a box, so that the two acre feet of water which can be stored in underground strata at a cost of three or four dollars, can be used to create a gross value of $2,000. Often the water is used two or three times for irrigation before it eventually reaches the ocean.

The success of the storage of water in underground reservoirs has been so marked that the people of California are now in favor of complete flood control and conservation of water. In fact, they are adopting the slogan: "In time of Drought prepare for Floods, and in time of Floods prepare for Drought."

EDITORIAL

Shall Public Domain Forests Ride Free?

FAILURE on the part of the Department of the Interior to *ask*, of the Bureau of the Budget to *approve*, and of Congress to *provide* adequate funds for the protection of timber on the public domain, has justly drawn fire from State governments and commercial interests on the west coast. The Department of the Interior controls 2,600,000 acres of forested public domain lands which have not been reserved for any purpose but which are interlocked with great areas of private timberland, State timberland grants, Indian lands, National Parks and National Forests.

For the protection of this vast area there has been requested in the last two years only $25,000 a year. Previous to this time an allotment of only three or four thousand dollars a year was made in the funds of the General Land Office with which to pay a few patrolmen. Ever since the efficient State and private protection agencies have been operating in the five Pacific Coast States, they have had to spend money protecting forests on the public domain to keep fires which start there from burning over their own lands. It is estimated that more than $67,000 a year of private and State funds must be spent because Uncle Sam refuses to recognize his obligation to abate a nuisance on his own property.

The cooperative principle of the Clarke-McNary Act is the one upon which it must stand or fall. In this act the Federal Government proposed to the States and to private owners that it join hands with them and that each agency shoulder a prescribed proportion of the burden of forest fire protection. This frank and cordial proposal was received in good faith by the non-Federal agencies in the public domain States. It sounded fair, and everybody but the Federal Government has played fair. For some unaccountable reason, however, the Department of the Interior will not ask, the Bureau of the Budget will not approve, and Congress will not appropriate the necessary $75,000 or $100,000 annually to meet the Federal Government's share of forest fire protection on the public domain. Furthermore, there is a sizable drag on the meager funds allowed the Forest Service for protecting the National Forests, when this effective bureau must divert its efforts and its resources to protect lands under the jurisdiction of another bureau.

A committee made up of representatives of federal departments, and charged with reporting to the chief coordinator of the Bureau of the Budget on the lack of forest fire cooperation between the departments, has recently completed a study of the situation. The report of the committee has not been made public, but in view of the facts, as illuminated by past fires, it is difficult to believe that the committee can fail to recommend to the Director of the Budget appropriation of funds sufficient to prevent and extinguish forest fires on the timbered portions of the public domain.

Uncle Sam's Interior Department cannot play in the band by hanging on the back of the car, nor should the American people be satisfied to witness the spectacle of a flat tire on the Federal wheel.

In Time of Flood

WHEN it rains in California there is usually little doubt about it. Street curbs often assume the role of river banks and storm sewers are taxed to capacity. When it is dry, it is very dry. Observation of these extremes started the business of underground water storage more than forty years ago. Since 1910 it has developed to a high state of efficiency. It is a cheaper and more effective method of turning floods to good account than the building of surface reservoirs in the mountains.

Elsewhere in this issue, Francis Cuttle, a pioneer in the water business, explains what is being done to conserve flood waters in California. By the use of dams and ditches, water is diverted from main channels and carried over the debris cones at the mouths of the canyons. It sinks into the gravel and travels slowly to

underground storage. Pumps are then employed to bring it back to the surface for use. At first, the public was skeptical, but with water, which cost $4 to store, capable of producing a gross value of $2.000 in oranges, experiments proved the method practicable and profitable.

Underground storing of water requires that the gravels be open and porous. If mud and ash washed down from watersheds fill up the gravels early in the rainy season, the flood waters cannot sink, but flow on to the sea and are lost. Fire in the hills may mean the failure of water in seasons to follow. The brush-covered mountains of southern California, useless perhaps for commercial timber production, stand ready to serve the people with liquid wealth as long as fire is kept out. People in this part of the country show little patience with the view that forests, whether of trees or brush, have no influence on floods. Silt and mud-laden torrents at the end of a bad forest fire season have too often proven statements of this kind ridiculous.

Californians came in force to secure from the Sixty-ninth Congress recognition of the need for attempting to fireproof the southern California hills belonging to the United States, by using fire breaks, trails, telephone lines and lookout stations. And they got $1,000,000 for this purpose. The American Forestry Association was glad to give them help at the hearings. The counties, fruit growers, water companies and other business interests of the region put another million with the Federal appropriation and spent their own money first. More than this, they have proved their good faith by holding the leadership in developing underground water storage. All they have asked is that they be given a fair chance to help themselves.

Water is wealth in California, and this wealth cannot be stored economically if the growth on the hills goes unprotected, current magazine articles to the contrary notwithstanding.

"In time of drought prepare for flood, and in time of flood prepare for drought." This is the slogan which Mr. Cuttle says California is adopting. It seems to be more than a slogan—it is a policy, well established and economically sound.

The Smoker's Code

NO one questions the right of a smoker to enjoy his tobacco, but he who takes on smoking uses more matches than most people. He thus adds somewhat to his responsibility to the public for care with fire, and apparently the American smoker has not recognized this responsibility while he has been in the woods. There are too many smoker fires.

A smoker's code recently devised for the States of Oregon and Washington may well be adopted by all smokers who have business or travel in the woods. The code calls on ordinary users of tobacco to indulge only while stopping in a place clear of all inflammable material. Such a practice will do away, to a large extent, with fires innocently started while moving in a conveyance or traveling afoot. The great danger with such fires is that the one who sets them may be miles away before his fire makes itself apparent and is readily extinguishable. There is no objection in the code to smoking during heavy rains or immediately after them. Careful men may smoke inside a vehicle on a two-way highway. Anyone may smoke safely above timber line. Smokers are charged to extinguish all lighted material after smoking.

Manufacturers of tobacco will lose nothing in good will of smokers and they will gain much in the gratitude of the entire public, if the smoker's code is used on cigarette package labels and the pipe-tobacco cans which are put out every season by the millions. Sixty-three words covers the original copy and it will not interfere with the artistic design of any tobacco package.

The makers of matches also have opportunity to warn their users among whom smokers must be greatly in the majority. Small boxes of matches or folders of paper matches carrying this code would be effective souvenirs for the use of any association or service which caters to outdoor people. Sporting goods houses could reach many a potential smoker's fire before it was set, by using stickers containing the code on goods sold during dry seasons.

These people can warn, but it is the smoker alone who can keep down his fires. It is to be hoped that the soothing effect of good tobacco will make all smokers sufficiently good-natured to observe these suggested precautions. This is the peaceful way to deal with the smokers' risk. Observance of simple rules is a small price, indeed, to pay for a coveted but dangerous privilege. And when smokers' fires are no longer a consideration in the forests, our forest fire menace in America will be cut in half.

The Whimsical Root Habits of Western Hemlock

By Allen H. Hodgson

With photographs by the author

HIGH ASPIRATIONS

These little hemlocks are making thrifty growth 'way up at the top of a fifty-foot high snag.

QUEER forms of vegetable life in the tropics are not surprising. Descriptions and pictures lead one to expect the unusual there. Little has been said, however, of certain strange specimens of trees that occur in our temperate zone. It is, therefore, astonishing to find in an ordinary northern Pacific coast forest a towering tree supported by slender roots twenty or thirty feet in length. It is hard to picture one of our commonplace trees acquiring such an unusual position; but there it stands with every appearance of being supported on long stilts. It is the western hemlock (*Tsuga heterophylla*), one of the important lumber trees of the west coast of Oregon, Washington and British Columbia.

The strange position of this tree is not a common sight in the more arid regions of the tree's range, but such a condition is of common occurrence in the moist fog belt, which lies within twenty or thirty miles of the coast.

But how, you ask, is such a phenomenon accomplished by trees whose every tendency, we have been taught to believe, should cause them to bury their roots in the depths of the earth?

Sunlight, in varying quantities, is one of the requirements of all trees. Moisture is another. The competition for these two things is very keen in any forest. Most trees, even the more tolerant ones, require an abundance of sunlight and warmth to germinate from seed and to develop through their seedling period. Most trees, during this early period also require mineral soil, but there are a few, and the western hemlock is one of these, that can germinate and start growth in decomposing wood. This accomplishment was evidently perfected by the hemlock centuries ago.

The west coast of Oregon and Wash-

A TREE ON STILTS

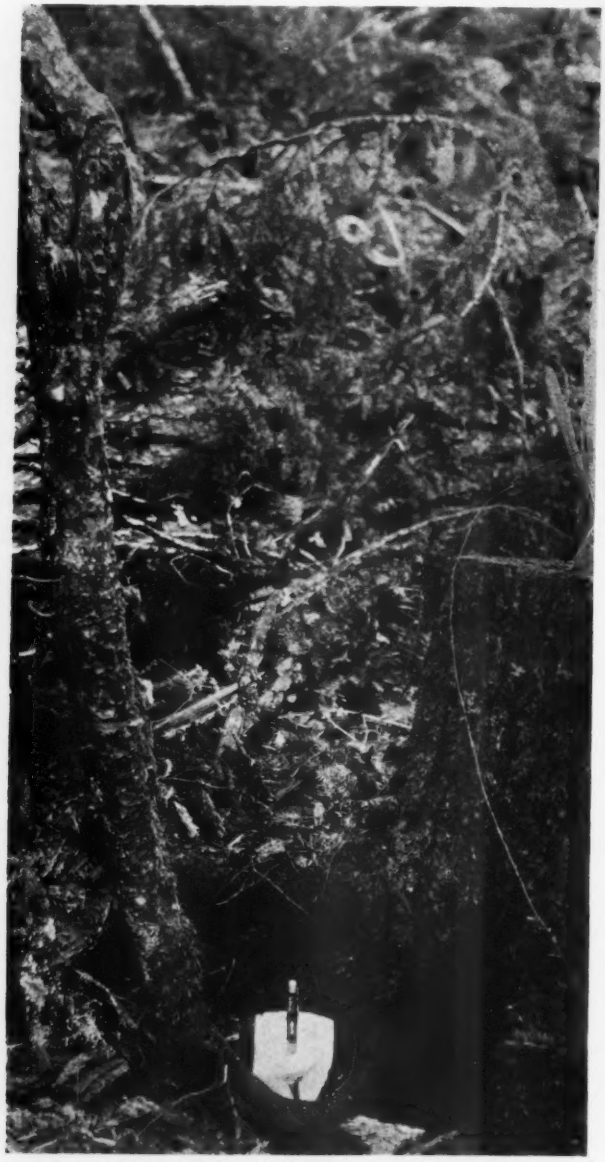
The strange position taken by this hemlock is of common occurrence in Western Oregon and Washington.

ington is blessed with an abundance of foggy, rainy days. During the rainy season, when from five to seven feet of water is precipitated, there are few places anywhere that are as wet as a fog-belt forest. As a result, the forest litter, windfalls, and standing snags soak up moisture as would so many sponges. As the fallen trees and standing snags begin to decay, the dampness sinks deeper and deeper until the wood contains sufficient water to hold moisture throughout the dry season, or from one rainy period to another.

As intimated, nature has given the hemlock certain advantages over its competitors in securing light and moisture. This superiority made it possible for the tree to utilize such objects as half-rotten logs, filled with water, for germinating seed. The seed which falls on such places seems to develop just as well, if not better, than in mineral soil. This is especially true if the latter is heavily shaded by ferns, brush and reproduction of other tolerant trees. Here on the log the young hemlock trees can secure sufficient sunlight and they are not crowded by other vegetation.

TWO ROOTS FEED UPON A DECOMPOSING SNAG

The hemlock tree, whose stump is at the right, has sent two well-developed roots up into the sapwood of the nearby snag. The rotten wood has been torn away from the snag to reveal the course of the roots. It would have been just as easy for these roots to have continued in the mineral soil.



A "CLOSE-UP" OF THE CONTRARY HEMLOCK ROOTS

This shows the root connection at the stump. At the knife-point the root had started down into the soil to a depth of six inches, but here it suddenly changed its course, made a horizontal twist and then started up the snag. There were no visible physical reasons to account for this change. Note the small feeder roots which have been projected from the main root into the snag.

Early in the period when the natural characteristics of the hemlock were being formed it was found that a young tree could not live forever on the contents of a decaying log. As the tree developed in size the crumbling wood could not support its towering weight. The resourcefulness of nature again came to the aid of this species and it became the trait of the young hemlocks, seeded under such conditions, to quickly produce long string-like roots. These worked their way around the log through the moist, decomposing sapwood until they reached the mineral soil. The roots then grew in diameter until they were large enough to support the growing trees against any ordinary gale. This practice, apparently, was very successful in giving the western hemlock the best of

its rivals in the struggle for existence. As time passed, its power of developing longer and longer roots and its ability to live upon decomposing wood increased until now one finds young hemlocks growing on the tops of snags forty or fifty feet in height. In characteristic manner the long thread-like roots work their way down through the sapwood of the decomposing snag to the ground. In time the snag rots away and the hemlock tree stands in mid air, supported only by its long roots, which have by this time grown in diameter.

UNDENIABLE SAPROPHYTIC TENDENCIES

The roots of this old Western hemlock stump (left) chose to resist gravity and work their way whimsically up through the decayed sapwood of an old snag rather than turn down and grow, as would be expected, into mineral soil.

A tendency which is developed by nature for one purpose seems, at times, to be utilized for another. The western hemlock developed such unusual propensities to obtain sunlight and warmth. Moisture was a secondary necessity. This was also true of mineral foods, taken in by the roots.

Early in their development, apparently, the roots of the young trees quickly reached mineral soil. As generation after generation of trees continued to depend, over lengthening periods of their existence, upon dead and decomposing wood, the food requirements of this species, in some cases at least, seem to have changed, or the tree has developed the ability to extract the necessary elements from other materials than mineral soil. Cases have been observed in which the roots of this tree have refused to go down into the mineral soil, even when they had the chance, but have left the earth to burrow upward through the rotting sapwood of a decomposing snag.

A fungus which lives entirely upon dead and decomposing wood is known as a saprophyte. Is the western hemlock developing saprophytic tendencies?

The Song of the White Pine

I sing a song of the white pine:
Straight as an arrow its shaft,
Topmost spear groping for heaven,
Form built with marvelous craft.
Its rootlets firm fixed in the granite,
Destroy it, North Wind, if you can!
Steadfast, upright, and aspiring,
Its habit a model for man.

I sing a song of the white pine,
Apostle of beauty and wealth,
Conquering waste lands with boldness,
Capturing pastures by stealth.
Prolific by right of its vigor,
It spreads far afield in the breeze,
Producing its seedlings by thousands,
All fearless of drought or disease.

I sing a song of the white pine,
Protector of village and farm,
Staying keen winds of the Northland,
And keeping its children from harm.
Its shadows a refuge for song-birds,
Its presence ozonic and clean,
With carpet as soft as the ermine
That borders the robe of a queen.

I sing a song of the white pine:
South winds breathe soft in its leaves;
Lovers that meet 'neath its branches
Vibrate to magic it weaves.
It gives of its strength to the weakling,
And comforts the soul of the strong;
Who lives in the shade of the white pine
Is guarded from trouble and wrong.

I sing a song of the white pine,
Substance of ships and of homes,
Giving its service unmeasured
Where'er foot of human-kind roams.
Light-weighted its fibers and powerful,
But docile to plane and to saw;
True blue is the service it renders,
The white pine knows only one law.

—K. J. Braden.

Trees With Interesting Personalities

to Indian Territory of Oklahoma, after their long journey from Mississippi, a journey full of hardship and sorrow. The Choctaws and Chickasaws alone lost more than 2000 of their number on the trail and many died shortly after arriving, from cold and hunger.

It was a sad time for the Southern tribes when they were forced to leave their hunting grounds with their places of worship and historical council grounds—and be driven like cattle into an unknown country.

It is proposed that the State acquire the old Governor Gardner Place at an early time, before this wonder tree of Oklahoma is destroyed and with it the valuable and interesting Indian history it has witnessed.

The Biggest Tree In Oklahoma

LOCATED on the Mountain Fork River, 1½ miles west of Eagletown in McCurtain County, writes Christian Jensen, Secretary of the Oklahoma Forestry Association, this great old cypress (Taxodium distichum) stands on land that was the former seat of government of the Choctaw nation. The old mansion, the court house and the "execution tree" are nearby, in a good state of preservation.

When asked about the age of the tree, the older Indians invariably say—"Been big all time." It has now a circumference of nearly 50 feet, a diameter of 10 feet at 4 feet from the ground and a height of more than 100 feet.

It stands on what was the first settlement of the Choctaws when coming in-

The Stump Mother

MR. L. J. STONEHOUSE, of Bay City, Michigan, made the picture of this unusual growth of a tree within a tree. It stands near Alger, Michigan, about 10 feet from the highway, and he says that in passing it annually on hunting and fishing trips for the past ten years, there is no marked change in its appearance.

THE SURVIVAL OF THE FITTEST

Not "faked" in any way, but the actual photograph of a very unusual tree growth in Michigan.

The oval inset shows a "close up" of the point from which, in the old stump, the vigorous young tree sprung.

and Varied Claims to Fame

Hendrick Hudson's Tree

ONE tree, of all the thousands that grew on Manhattan Island when Hendrick Hudson arrived in 1609, writes Henry Beckett, of New York, still remains. It is the only living thing on the island which was there when he came — a tulip tree, now nineteen feet in circumference, 123 feet in height, estimated to be almost two hundred and fifty years old. It

THE HUDSON TREE

was protected by an iron fence in 1912, when a tablet was placed on the trunk.

The tree stands at the northwest corner of Manhattan Island, on the bank of the Harlem River, just before it joins the Hudson. It is really on the edge of an inlet, where Hendrick Hudson is supposed to have landed, after sailing through The Narrows from the sea, into New York harbor, up into the river named after him, and on up Manhattan's length of twelve miles, until he reached the mouth of the Harlem.

California's Giant Fig

PLANTED in 1852 by one Axtell, near the town of Woodbridge, in San Joaquin County, this ancient fig is named for the Hall of Fame for Trees by Mrs. May Crocker, of Lodi. Said to be the largest tree of its kind in the world, the spread of its branches has a diameter of 110 feet and a circumference of at least 330 feet. A prolific bearer, it produces each year a crop of excellent fruit calculated by thousands of pounds, according to Mr. Emory Thompson.

An Apple Tree With A History

STANDING on Fruitvale Avenue, in Oakland, California, the claim of this tree—which was nominated by the Fruitvale Woman's Club—is that it was planted by Henderson W. Luelling, the pioneer who in 1847 (before the discovery of gold in California) brought several thousand nursery trees across the plains to the Pacific Coast in wagons drawn by ox teams—he was truly the "Father of the Fruit Industry" of the Pacific Coast.

The Lesson of the 1926 Fire Season

By Fred Morrell

HOSPITALS are filled with patients, sick because they did not prepare themselves against disease; were not protected against exposure; did not seek medical attention soon enough. Penal institutions are crowded with inmates because those responsible for training the young did not remedy undesirable influences; did not prevent their charges from exposure to them; did not apply corrective measures in time. Forestry in America is sick for reasons altogether comparable. Fire, the great red scourge of the forest, is taking its toll of weak and strong alike because the American public has not removed the hazards, does not protect the forest from exposure, does not apply the remedy in time. Dead forests result from these failings just as dead men result through failure to follow prescribed rules of health.

A MOTOR VEHICLE CAN TRAVEL MANY TIMES FASTER THAN A MAN ON FOOT OR HORSEBACK. THOUSANDS OF MILES OF ROADS LIKE THIS ARE NEEDED TO MAKE THE FORESTS OF THE NORTHWEST ACCESSIBLE TO FIREFIGHTING CREWS

The lesson of the 1926 fire season is one of care, of prevention, of action. It is the lesson of every other fire season. It is one that the American public must learn if the "life expectancy" of our forests is to be lengthened. It is a lesson that the individual must learn; care, more care and still more care; action, more action and still more action. To the degree that the lesson is learned will the fire losses be reduced. The problem in public forestry is the same as that in public health and public morals. The problem in private forestry is the same as that in health and morals of the individual. If we are to have health, if we are to have commendable character, if we are to have forests, we must pay the price in ideals, in brains, in money that will produce them. Suffering the loss of burned-over forest lands will no more bring about this need than will the burying of dead men bring about a healthy race or the confinement of ruffians in houses of correction bring about good public morals.

That the American public is not yet willing to pay that price has again been demonstrated. In the great forests of the Northwest fire losses were greater in 1926 than the combined expenditures for pre-suppression and suppression. More money was spent for fighting big fires than was spent for fire prevention, fire detection and the extinguishing of small fires. Federal, State and private agencies were alike in this respect. Up until the time the big fire occurs, everyone is trying to save his money just as the improvident man saves the five dollars necessary for a physical examination. When the fire is raging the forest owner opens his pocketbook and spends without restriction in a vain attempt to stop the disaster that might have been prevented by reasonable care.

We are not yet past the stage of talking about care with fire in the forests. We are in the position of the man who talks about the evils that are corrupting public morals, but does nothing about it. We are not serious enough about it. Our forest owner is still willing to risk his forest property to hazards of slash and snags. He

is still willing to expose it to the germs of fire carried by unscreened engines and careless smokers and campers rather than pay the price of prevention. Perhaps in a large measure he is compelled to take this chance, but as an individual property owner he is losing by doing so. But it is those phases of forest protection which are the duties of the public that lag most. The individual citizen cannot protect himself against contagious disease unless the public does its share through removal of the hazard, through such measures as sanitation and quarantine. The individual parent cannot guarantee that his children will be upright citizens unless the public does its share through suppression of wrong influences. In these things the public readily directs its criticism toward the individual. In forestry the individual owner has lagged in prevention measures, but he is on the whole making a better showing than the public. The ratio of money spent for pre-suppression by the private fire protection associations in proportion to that expended for suppression was higher than that spent by the public agencies. The losses were correspondingly smaller.

THE SLASH HAZARD—AS DANGEROUS TO THE FOREST AS AN OPEN SEWER IS TO PUBLIC HEALTH

Several of the Northwestern states have failed year after year to make available in advance the money necessary to pay for protection of intermingled state lands to a degree that the private owner is protecting his. Private owners have advanced the money and have been dependent on fickle legislative bodies for reimbursement. Their property has been exposed to hazard from fires set by recreation seekers who are invited and urged to go into the forests, on the basis of general community and national welfare. But the public has not been willing to advance its fair share of the brains and money and law enforcement needed to meet these extra forest hazards.

FOREST SANITATION—SNAGS REMOVED AND SLASH PILED FOR BURNING

The American public has probably accepted the statement that "everybody loses when forests burn," but that knowledge exists only as an academic statement. We have learned that morons and criminals are leeches on the public welfare, but we have not yet eradicated the old, old viewpoint that one's family is his property and that a son gone wrong is primarily the father's rather than the public's loss.

In all of these things we are making progress, but we

PROTECTION OF THE INACCESSIBLE FORESTS OF THE NORTHWEST IS DEPENDENT LARGELY ON THE "SMOKECHASER." HE MUST BE A REAL WOODSMAN AND A "HE-MAN" WHO CAN GO ALONE INTO THE WILDERNESS AND "GET HIS FIRES." HIS CLAN IS TOO FEW AND HIS HOUSING IS INADEQUATE

have not yet as a nation learned that cigars, cigarettes, camp fires and matches in the woods are just as dangerous to forestry as a smallpox epidemic is dangerous to public health. We have not learned that slash, debris, and other controllable hazards are just as dangerous to forestry as undisposed garbage, clogged sewers and contaminated water supply are to public health. Or if we have learned these things we are not yet ready to take necessary action.

Good fire fighting organizations are a necessary part of fire protection, just as good physicians and surgeons are a necessary part of public health. But all of these things are curative and not preventive. The magnificent fire fighting department traveling at reckless speed through the city street, the daring, capable firemen directing a flow of water on the fire, rescuing victims from up-story windows, provides a thrill for us all. The brilliant surgeon rescuing the patient from death through the skill of his brain and hands causes us to bow our heads in admiration and wonder. A forest fire-fighting machine working smoothly and efficiently with men giving all that is in them to meet the crisis gives us the same thrill, the same admiration, the same wonder. We are prone, because of the glamour and the romance of it all, to think in such terms as these when we think of husbanding our human and our natural resources. We are disposed too often to overlook the fact that the cancer the surgeon is giving his all to cure might have been prevented, that correction of a defective flue would have eliminated the need for that magnificent run of the fire department. We are prone to forget that no matter how skillful the surgeon, or how fast the fire department, they will in most cases, arrive too late.

Fire-fighting organizations of the Northwest performed better in 1926 than they have ever performed before. Thousands of men gave long days and nights to fire-fighting, gave all of the knowledge and physical stamina they could command. Sometimes they won, frequently they lost the fight. Dead forests, two million acres of forest land burned over, is the net result.

From far and near the writer has heard the comment "You didn't do a very good job." That's true, and the answer is. "You didn't either." Success depends more on right public ideals in forestry, and willingness to spend the brains and the money for prevention than it does on efficiency in putting out fires. The fire department can do only a small share in that. It is the public's business to see that prevention means are provided, and then demand results.

IN OUR NEXT ISSUE

Throughout the immense coastal plain of the Carolinas, hundreds of rice plantations have been abandoned and the once stately mansions destroyed. However, the country is still there; and the wild life is there. Archibald Rutledge tells of the reclaiming of these vast marshlands by wild life in "Plantations as Game Preserves," in the October issue of AMERICAN FORESTS AND FOREST LIFE. "Sky Dusting the Hemlock Spanworm," by S. B. Fracker and A. A. Granovsky, brings to light a new use of the airplane in forestry. "Exploded Wood," by Erle Kauffman,—in which sawmill waste is shot from guns before being transformed into a variety of press-board, and "The Battling Tern," by Charles A. Parker,—a vivid story of the courageous little sea swallows at Tern Island, off Cape Cod, are among the many good features of this number.

"Presidential Timber"

New Planks for Old Come From the Forests of Different Sections To Re-roof the White House

By Winifred Allen

IN a storehouse of the Office of Public Buildings and Parks in Washington, D. C., is an ancient wooden roof truss—just old timber until you know its history.

The truss is one of those removed from the roof of the White House in the renovation of the mansion now nearing completion. After literally holding the roof over the heads of the presidents of the United States for the last 112 years, these trusses are in excellent condition as far as the wood is concerned, and a half section of one will be preserved not only for its historical association but as an example of the remarkable durability of wood.

After the Battle of Bladensburg in 1814, the British soldiers with their flaming torches, came thronging up Pennsylvania Avenue and burned the White House, the fire destroying the interior and seriously damaging some of the masonry. Reconstruction was begun shortly after the fire, the new roof being held in place by sturdy wooden trusses. Today these trusses, with their timbers in almost as good condition as when they were cut from the longleaf pines of the South 112 years ago, are interesting as examples of early workmanship. The timbers, all hand sawn, are held together not only by mortising but with dowels and heavy wrought iron straps pounded out by hand.

When the old roof was removed a few weeks ago it was found that there was practically no deterioration of material in the massive main trusses and only the ends of the timbers forming the trusses over the north portico were decayed and damaged by powder post beetles. Builders of a century ago were not familiar with the use of preservatives to lengthen the life of the exposed wood and did not treat the material as would the builders of today. Neither did building superintendents of a later period know that the application of certain chemicals will put a stop to the ravages of powder post beetles once the insects have been discovered in a building.

A HALF TRUSS FROM THE WHITE HOUSE ROOF WHICH WILL BE PRESERVED AS A SAMPLE OF OLD TIME WOOD CONSTRUCTION. THIS SOUTHERN PINE, 112 YEARS OLD, IS IN AN EXCELLENT STATE OF PRESERVATION

Overloading an attic that was not designed for occupancy of any kind and certain defects of construction, as well as subsequent "tinkering" rather than any deterioration of the wood, are said by army engineers to have been responsible for the unsafe condition of the roof.

In partial explanation of the failure of the trusses, army engineers declare that they were apparently designed to carry only the roof loads on their upper chords. Because of lack of space in the lower stories, however, the attic space was used for the storage of records, bringing heavy loads on the lower chords.

Forests of various sections of the country have contributed to the renovation of the mansion. Northern white pine from Minnesota and southern yellow pine are being used for the millwork; Louisiana pine for the sub-flooring, and hardwood from the middle west for the top flooring. The structural lumber in the new permanent roof was treated with wood preservatives and it is expected to last as long as the iron, steel and slate with which it is associated.

Naturalizing Bulbous Plants

"Everywhere about us they are gleaming, Some like stars, to tell us Spring is born."

By David Griffiths

"Stars, that in earth's firmament do shine."

WHAT COULD BE LOVELIER THAN THIS NATURALIZED PLANTING OF NARCISSUS, BY THE STREAM IN THE SHADOW OF THE WOOD

THE American estate, as a rule, is wonderfully devoid of early spring flowers of the delightful bulbous kinds adapted to grow in that most pleasing informality usually referred to as "naturalized." Possibly America is too young yet to have accumulated stocks or acquired the habit of mass plantings on informal lines upon lands receiving little or no cultivation. Such ventures are matters of slow growth. Possibly their extensive development may be delayed until the American grower has produced such wares and must needs push his sales and develop a market for them.

There are already plenty of rather brilliant examples of the use of a comparatively few items, but the habit has never become contagious and widespread in this country as it has in some of the older ones of Europe.

There are fabulous quantities of certain bulbous stocks adapted to naturalizing used each year, but mostly in formal plantings and in greenhouse culture for cut flowers. In largest measure these are either lost or destroyed before the next season appears, and new stocks need to be purchased. Not until very recently have even the Daffodil and Paperwhite stocks, used to the extent of sixty to seventy millions of bulbs annually, been saved for further use. These are now preserved to a large extent, but for rejuvenation for a repetition of their utilization in the florist business almost entirely.

There are a great many bulbous items which are capable of utilization in the beautification of landscapes and vistas on a non-cultivated basis, probably a much longer list than is commonly realized. Indeed, a mere enumeration of them would look like a trade catalogue or a botanical list. It is not the intention to cover the whole subject in this short writing. Nothing more will be attempted than to touch on some of the high points, and only a few of them at that.

Probably the first and foremost of the bulbs suited

"Daffy-down-dilly, just come to town
With a yellow petticoat and a green gown."

THE DAFFODIL HAS BEEN PRAISED IN VERSE EVER SINCE THE BIRTH OF POETRY

for naturalizing are the Daffodils,—by no means a small group. A good commercial list contains 200 varieties, and no two commercial lists agree in their entirety in the varieties offered, and it would not be difficult to get together 400 distinct things, without the necessity of indulging in expensive things either, while the entire list of varieties will run up to 3,000 or more.

Most of this vast array of material is adapted to be planted in that most pleasing let-alone basis in the edge of woodland, among scattering trees, by the edge of streams, or in rocky declevities. For three or four weeks in the spring, while the oaks and beeches are just awakening, they add to aesthetic enjoyment by their peculiarly g r a c e f u l charms which have never been adequately described in either prose or verse, although poets have sung the praises of "ye daffodil" since poetry began to be written.

The plants come up, delight one with their charms, rejuvenate their root systems ready for another year's performance, and disappear before the shade of an open deciduous forest seriously interferes with their development.

Large outlays of money and effort, great numbers of varieties, or extensive numbers of plants are not imperative in the production of pleasing effects with Daffodils. Two or three varieties which can be purchased for two or three dollars a hundred, well chosen and well placed, may produce a charming effect. In masses of irregular and informal dimensions in almost any setting they are particularly beautiful at a time when the beauty of a floral display is unusually welcome.

They are adapted to the path edge of the humblest cottage, and to mass plantings of acres of meadows or open forest areas, where a minimum of care or attention is required in return for a perennial month's beauty.

With such a plethora of varieties, it may be a little confusing to the prospective planter to select suitable materials for naturalizing. Let us enumerate a few

GROWING ON PUGET SOUND, THESE TALL AND GRACEFUL NANKEEN LILIES WERE PLANTED OUT TEN YEARS AGO

of the cheaper and effective kinds which may be used to begin with and which may be augmented later. Ornatus, Recurvus (Pheasant's Eye), Emperor, Empress, Conspicuous, Madame de Graaff, Golden Spur, Obvallaris, M. M. de Graaff, Mrs. Langtry, Autocrat, Sir Watkin and Trumpet Major will usually stay put and give a wealth of blossom for many years, if not indefinitely. Indeed, there are instances of 100-year-old plantings still functioning without any cultural attention.

"Stars of earth, these golden flowers."

NARCISSUS IS CHARMING IN THE OPEN GARDEN BED, AND ITS CUT BLOSSOMS KEEP THE HOUSE GAY WITH THE GOLD OF SPRING

SNOWDROPS (GALANTHUS NIVALIS) ARE LEADERS IN SPRING'S VANGUARD AND BRAVELY UNFURL THEIR DAINTY BLOSSOMS IN EARLY MARCH. THEY ARE WONDERFULLY ADAPTED TO NATURALIZING AND MULTIPLY INDEFINITELY

While the garden Tulip is not usually considered suitable for naturalizing and has seldom been discussed from this standpoint in this country, it is nevertheless one of the best subjects for this kind of handling. It should be employed by the thousands on every estate in America, especially northward, and there are certain species, such as Clusiana, Turkestanica, Praestans, etc., which may thrive in the Southland.

There are some characteristics which militate against the use of the Tulip for naturalizing. The plants are gross feeders and rapid multipliers, consequently they are prone to reduce in size and not flower. They are also prone to disappear, due to the inroads of rodents.

On the other hand, it may be pointed out that there are notable examples of success with them. The writer has had several colonies of Single Early Tulips which have flourished in grass in a heavy clay fill for 10 years or more. One instance is recorded that Single Early Tulip Cottage Maid blossomed every year for 20 years on Puget Sound when planted in heavy clay soil. The last year there were over 60 bulbs of all sizes where one was planted, and three or more were large enough to flower the next year.

Deep planting is conducive to longevity and good performance in the Tulip when grown on a let-alone basis. In a friable loam the bulbs will come up through 12 to 15 inches of soil, and if allowed to mature their leaves they function indefinitely. This matter of deep planting seems to be the main requisite to success in naturalizing. My own experience, however, has been on a heavy clay fill, which is about as discouraging a situation as it is possible to get. It has, however, the redeeming feature that so far as the naturalizing of Tulips and some other bulbs is concerned, it discourages rodents also.

If successes are attained on heavy clays, as well as on friable soils, there is every reason why our large estates should devote themselves to the incorporation of these gorgeous ornamentals in their landscapes for the production of incomparable scenic beauty from March well into May.

It is doubtful whether there is another group of bulbous stocks which offers such a wide range of colors

or diversity of stature for use in the natural landscape.

Any selection will include, if possible, that delightful little species, Tulipa dasystemon, no larger than a Crocus and having two to five flowers on a stem. It will be suitable for any sort of situation providing that it is always in full sun. If the bulbs happen to be a little high-priced at the moment, a few hundred will give abundant seed which, if planted under garden conditions, will reach flowering size the third or fourth year and be ready to go into their permanent positions even the second year. It does not multiply well by the bulb, which is an advantage for naturalizing; but it comes readily and true to type from seed.

THE CROCUS IS ONE OF THE MOST SATISFACTORY NATURALIZING SUBJECTS. THESE ARE BEING GROWN FOR EXPERIMENTAL PLANTING OUT

Every list for naturalizing will contain the beautiful yellow native of Europe, Tulipa sylvestris. It has thrived for six years in my clay fill, and Dr. Harshberger tells me it is naturalized in a meadow near Philadelphia since no one knows when. It has outlived the old plantation buildings and may have survived since Colonial days.

There is little recorded experience as to the best varieties, so little can be said beyond the experience of a few acquaintances. Cottage Maid, Prince of Austria, Artus, Belle Alliance, McKinley, White Swan, Mon Tresor, Kaufmanniana, Titian, Clara Butt, King Harold, Gretchen, Yellow Prince, and Farncombe Sanders, have persisted well under very adverse conditions in the District of Columbia, some of them in grass for six or seven years.

The best opportunity which has ever been had in

Photograph by Reginald A. Malby

AND THIS IS THE BEAUTIFUL RESULT THAT MAY BE OBTAINED—A STAR-STREWN CROCUS RUG FLUNG BENEATH THE BEECHES

this country to observe the persistency of Tulips may be the Government garden at Bellingham, Washington, where Tulip varieties indiscriminately persist as long as they are allowed to. They come up year after year so long as the herbage is allowed to approach maturity before being cut. Indeed, the Tulip is a weed on the garden, and special attention must be given to get rid of it before a second crop is grown on a piece of ground. Much time is consumed in digging out bulbs which come up the second year from bulbs missed in digging the crop the previous year. They even persist to a remarkable degree after two or three years' culture to grain crops. To get rid of this residue, it must either be dug and destroyed when the foliage is in evidence, or plowed under once or twice in late March or early April.

In these plantings there have been grown a dozen species of Tulips, 150 Darwins, a dozen or more Cottage, 40 or 50 Single Earlies, a few Parrots, and some Ducs. These are exactly naturalized conditions and consequently throw important light on the applicability of Tulips in general for naturalizing in unmowed meadows and grass lands generally.

The Snowdrop is not only adapted to naturalizing but better adapted to that form of culture than any other. Indeed, it resents coddling or even the ordinary handling incidental to the production of most bulbs, and is satisfactorily produced only under a large measure of "letting alone."

It does well in borders where competition is reduced, multiplying to 20 or more in seven years from a single bulb. In competition with other vegetation under naturalization, the reproduction is reduced somewhat, but under reasonable fertility and moisture the Snowdrop luxuriates and remains and multiplies indefinitely.

These delicate harbingers of spring are delightful in their beautiful simplicity of structure and the exquisite purity of their color.

They can be enjoyed for three months or more if one takes the trouble to select the proper varieties. Galanthus nivalis and G. Elwesi blossom in March and last for two or three weeks. A single colony of G. cilicicus, originally from a single bulb, has been in blossom in the writer's yard in a heavy clay fill each Christmas for the past 10 years. When it is very cold, the whole plant lies prostrate and a heavy fall of snow flattens it out completely, but when the snows are melted and the weather gets mild, it straightens up again and hangs out its handsome white bells as though the performance was all to its liking. This is not all. It has missed making a crop of seed but one year and that was because some inconsiderate individual stole the flower.

These plants are in blossom from Christmas until the common and giant Snowdrops open. They are not only the harbingers of spring but the contemporaries of winter. Is there anything that can appeal to a plantsman or anything in landscape composition that can give greater pleasure than a few clumps of flowers of such delicate and chaste beauty in full blossom on any open winter day from Christmas to early March?

A fit companion of the Snowdrop is the golden yellow Winter Aconite, admirably adapted to naturalization in open woodlands or edges of shrubbery or woods, when the forest débris is not too heavy but sufficient in volume to reduce the competition of rank growing vegetation. In such a situation it will grow and multiply, and, if conditions are suitable, will spread by its abundant production of seed which requires three years to reach maturity.

Of larger and later performance is the Grape Hyacinth, which may be had in various colors, light azure, light and dark blue, and white, all of which are desirable. Once planted, these remain until strenuous effort is made to get rid of them.

Some of the Squills approach the Grape Hyacinths in their wonderful reproduction. The Spanish, Italian and English groups are wonderfully prolific and are admirable subjects for naturalizing for blossoming effects in late May. They may be had in a variety of colors,—blue, pink and white. These are large plants, a foot or more high.

Of entirely different aspect are the 2-leaved and Siberian Squills. These are delicate, dwarf, and very attractive early spring flowers which follow closely after the Snowdrops. Of very similar aspect and quality is the "Glory of the Snow," and these are all admirably suited to naturalizing.

A valuable naturalizing subject not often seen in this country, except in California, is Triteleia. It is an attractive little flower and masses up so as to give a striking color display under lack of cultivation and neglect. Its leaves when crushed have the odor of onions. It is worthy of extended use in landscapes.

Space will not permit a discussion even thus briefly of Camassia, Crocus, Nerine, Ixia, Sparaxis, Zephyranthes, Colchicum, Alstromeria, Iris, Cyclamen, Trillium, Lilium, etc., for something must be said about how to handle these materials so as to get the desired results.

The form and method of naturalized planting may be endlessly variable in the arrangement and the combinations of the bulbous flowering materials. The plan followed should be that which appeals to the doer.

As there is no definite set formula for the materials or their arrangement, neither is there a definite way in which to plant and distribute the stocks used. In the Middle Atlantic States, planting is usually done from about September fifteenth to October fifteenth. Bulbs should be dug in July and placed in a cool place for storage until planting time. In more southern states planting is done a little later, as late as the middle of November, and farther north from the first of September until the first of October. The planting may be done in various ways, preferably on account of

economy of labor, when there is a good moisture content in the soil.

Small bulbs such as Glory of the Snow, Snowdrops, etc., need not have over 2 inches of soil over them unless the soil is very friable, when 3 inches might be better for permanent plantings. The largest bulbs should have not less than 4 inches of soil over the top of the bulb, and many times are benefited and made more permanent by a still deeper planting. Crocus often run out in time, unless reestablished from seed, by working toward the surface at each period of growth so that a setting fully 4 inches will function longer than a more shallow one.

There are various ways of setting the bulbs. In the British Isles a tool is employed, much like a giant cookie cutter, which removes a deep columnar section of sod for the insertion of the bulb and the sod is then returned and pressed into its place.

This nicety of handling is not commonly indulged in, for the planting can be more rapidly done with an ordinary spade. The common method of operation is to thrust the blade into the soil at an angle of about 45 degrees, raise the sod, insert the bulb to the proper depth, remove the spade and press the sod back into place again. Usually it is not necessary that the bulbs be set exactly upright.

A mattock can also be employed nicely for planting large bulbs. The sod is removed with a thrust of the proper depth, the bulb inserted and put in place with the pressure of the foot.

Another very convenient tool for setting bulbs is a large, strong dibble. The best is one made by pointing an 18-inch piece of a D spade handle. In soft ground, holes can easily be made and the bulbs inserted. The holes can be filled by pressing in the soil from around the hole with the point of the dibble, or more effectively, if the planting is reasonably thick, by spreading fresh loose soil over the area and filling the holes with the back of a rake drawn back and forth over the loose soil until the surface is level and smooth again.

Such a planting must of necessity be informal enough providing no geometrical or other plan is followed. All that is necessary is to give a little attention to vary the thickness of the planting and to see that a few clumps are carelessly put beyond the general confines of the area occupied.

Our 52d Birthday

On September 10, 1927, The American Forestry Association will celebrate its fifty-second anniversary as an organized body.

Members will be interested in the photographic reproduction here of a column from the *Chicago Tribune* of Saturday, September 11, 1875, telling of the event, in the city of Chicago.

be bought ... mostly by heads of families, but also by the managers of business houses for distribution among their customers. It is possible, upon considering the question more maturely, that the managers of the Exposition may find reason to change their views on this point.

FOREST-CULTURE.

ORGANIZING AN ASSOCIATION.

A number of gentlemen interested in forest-culture assembled in the ladies' ordinary at the Grand Pacific yesterday morning at 8 o'clock, for the purpose of organizing a Forestry Association. Robert Douglas, of Illinois, was elected Chairman.

Dr. John A. Warder, of Ohio, spoke briefly upon the need of such an association.

Dr. Humphreys, of Galesburg, Ill., alluded to the rapid destruction of our American forests, and thought that some combined action should be taken to save them. At the Vienna Exposition two years ago, an International Forestry Association was formed, the scientific men of Europe realizing the immediate necessity of it.

Mr. W. C. Flagg, of Illinois, added his opinion to those already expressed. He suggested that the newly-formed association meet alternate years with the Pomological Association. He thought that the Association should embrace the Provinces of Canada and the Republic of Mexico.

Mr. C. B. Galusha, of Illinois, moved that a committee of three be appointed to draw up a constitution for the Association.

Dr. Warder offered, as a substitute, a resolution that the gentlemen present organize into an American Forestry Association. He thought all formalities were unnecessary.

The following officers were then elected: Robert Douglas, of Waukegan, Ill., President; Prof. McAfee, of Iowa, Secretary.

The President, Mr. Douglas, offered his resignation, and it was unwillingly accepted by the Association. Dr. J. A. Warder, of Ohio, was then unanimously elected in his place.

On motion of Mr. Allen, of Nebraska, it was decided to hold the next meeting at Philadelphia on the 15th of September, 1876.

On motion the following Committee was appointed to collect statistics for the first meeting: Messrs. Allen, of Nebraska; Humphrey, of Illinois; Mr. Richards, of Utah; John Sam, of the District of Columbia; Judge Whiting, of Iowa; Mr. Moody, of New York; Mr. Parry, of New Jersey; William D. Breckenridge, of Maryland; Thomas Meehan, of Pennsylvania; William N. Byers, of Colorado; James S. Stickney, of Wisconsin; Dr. Gale, of Kansas; T. T. Lyon, of Michigan; Judge Knapp, of New Mexico; M. J. Harvey, of Virginia; P. T. Lacey, of Minnesota; George Holzmith, of Missouri; J. W. Rosemount, of Tennessee; Mr. Harrison, of Ohio; G. B. Sawyer, of Maine.

On motion, the President and Secretary were instructed to prepare a constitution, and to lay out a proper programme for the next meeting.

The meeting then adjourned.

THE CUSTOM-HOUSE.

THE COMMISSION THROUGH.

At its last meeting the Board of Directors of The American Forestry Association appointed the following to serve as the Committee on Elections for 1928: Col. W. B. Greeley, 219 Elm Street, Chevy Chase, Maryland, Chairman; Philip W. Ayres, 4 Joy Street, Boston, Massachusetts, and Francis Cuttle, Riverside, California.

Officers to be nominated in the election for 1928 are as follows: President, twenty-one Vice-Presidents, Treasurer and four Directors. The Directors whose terms expire at the close of 1927 are Henry S. Graves, Charles Sheldon, William P. Wharton and William M. Ritter. Suggestions for nominations should be submitted to the Chairman of the Committee on Elections; nominations of candidates for any of the above offices must be made by not less than twenty-five members of the Association, signed by the members submitting them. All suggestions and nominations should be sent to the Committee on Elections on or before November 1.

One Hundred and Five Miles of Rapids

(*Continued from page* 518)

requires the minute co-ordination of mind and body, the more so, if your cargo is the precious food which means success or failure to the expedition. Sites large enough to make camp on were not plentiful in the canyon, yet we never wanted for a beautiful spot large enough for our tent and fly.

Moscow Bar is a small flat, the site of an old placer camp, and the twin cabins which once housed the miners who had waded and boated up the river, still stood, but were slowly rotting to the ground. Our meat was running low and as deer were using the old building for a lick, we began to have designs on those deer. We nailed cleats across the windows of the rickety old cabin and swung a crude door with a trip trigger above the entrance for a trap. It seemed easy. A deer upon entering, tripped the string and the door dropped behind him. After setting the trap, we visited the cabin morning and evening. The third morning our trap had been sprung but our meat was gone. Our deer had squirmed out through a small hole beneath the walls.

The trap was reset, but no more deer entered. We then resorted to our .35 automatic, and although deer had been seen daily, true to tradition, we saw none when carrrying the gun. With our meat supply now completely exhausted and still two or three weeks' work ahead, we were becoming desperate. Claud and I decided to drop down the river to the nearest settler and back pack some meat and other necessities. Taking our third raft, we dropped down thirty miles to where our map showed a trapper's cabin. The cabin was easily found, but the trapper was gone as was all his food except one old mouldy pork shoulder suspened from a rafter.

We then dropped six miles farther down the river to the cabin of an old settler, who, to our disappointment, was also out of meat, but who supplied us with the other provisions we needed. This man was the first human being we had seen or spoken to outside our own party since leaving the Bungalow, two and a half months before. Abandoning our raft, we loaded our packs and started back on our thirty-six-mile tramp up the canyon. After wading and rewading the river many times, we reached camp about noon the second day. On our way back we had helped ourselves to the mouldy shoulder of smoked meat. I never dreamed so much good, savory meat and soup could come from one old shrivelled shoulder joint as Frank got from that one.

Frank cut and peeled cedar logs for our fourth raft, which served us till we reached Asahka. Our camp in the canyon between Skull and Quartz Creeks was on a bar beside a stretch of quiet water, the first and almost only quiet water we encountered along the river. It was a beautiful spot, peaceful and silent, save for the occasional splash of a beaver who, at night, used our raft for a diving board, or the faint murmur of the rapids below wafted to us by the breeze. The boys laughingly remarked that the quiet kept them awake.

At Twin Creeks we found the remains of an old cabin built on a huge boulder under which the creek flowed. It was the only place in that locality which was big enough and level enough for a cabin. One evening, sitting around our fire, Frank told the story of the two prospectors who had built the cabin. Tony, one of the men had gone to a cache for supplies and upon returning that evening, found the door open and his partner gone, although his hat and coat were in the cabin. Tony anxiously, but patiently, awaited the return of the other for many days but he was never seen or heard from again. The solitude and the continuous gurgling and rumbling of the creek beneath the rock floor of the little cabin, preyed upon the man's mind until, when found, he was raving mad. He imagined his partner was under that rock, mumbling and grumbling, trying to get out.

In addition to his many accomplishments, Frank was also an ardent fisherman. Fried or baked trout was found on our table almost daily. He took his rod one morning and headed for a narrow rock reef, some ten feet high, which projected into a pool a short distance from camp. Climbing to the top of this perpendicular reef, pole in hand, almost breathless, eager to cast his line into the swirling water, he nearly collided with a huge brown bear coming up the opposite side, not five feet away. Frank was no coward, but he must have suddenly decided the place was too crowded, for he dropped his pole and fell backward into the mud at the base of the ledge, and in an incredibly short time was out on the line with us. We gave him our gun, and although he hunted most of the day, the bear was not seen again.

Our survey was completed at Isabella Creek, and on September 22nd, just three months from the time we left Orofino, we loaded our boat and raft with our luggage for the last time and started down the river to Asahka. It was a three days' trip. The water was now at low stage and we were kept busy dodging rocks and helping the raft over shallow places.

We were a wild and wierd looking crew, the most ragged bunch of tramps that I have ever seen, canvas patches from head to foot, but happy, healthy and hard as nails. We abandoned our boat and raft at Asahka, also our rags, bade good-bye to Frank and boarded the train for home.

The traveler into the North Fork of the Clearwater today will find a much used auto road to the site of the old bungalow, and a wonderfully scenic and well beaten trail, carved for miles through solid rock, traversing the entire length of the canyon to Asahka.

A Woman Tree Planter—

Jessie Ackerman, F.R.S.G.S.

By May A. Ross

I HAVE just had a chat with Jessie Ackerman, the distinguished writer and traveler, whose special hobby is a love for trees and a passion for planting them. In her many journeys around the world she has left living tokens of friendship growing and flourishing in all but three countries of the world. It is interesting to understand how any woman could have adopted such an unusual interest so I asked this tree enthusiast to tell me how she conceived the idea. "You see," she replied, "I made all those trips alone. I was young: constantly going from country to country where I knew no one and as trees were everywhere they became companions in a very real sense. Why, I love every tree I ever saw, even those scrubby specimens away off on the deserts of Australia that bear wooden fruit. Oh, yes, the 'brush' is full of peach trees bearing perfect fruit, pit and all, but the fruit is wood—just wood. I have gathered them to kindle a fire to make tea when traveling on the plains. There is also a pear tree producing wooden pears with perfect seeds. I love those too.

MISS ACKERMAN HAS PROVEN HER LOVE OF TREES BY PLANTING THEM PERSONALLY IN ALMOST EVERY COUNTRY OF THE WORLD

"Olive Schreiner's mother once said to me, 'You see, I have photographs of everybody on my walls; they never talk back.' Trees talk but they never talk back. To me a tree is the nearest approach in all nature to a human being. I have returned to places fifteen and seventeen years after having planted trees there and refreshed myself in the grateful shade where these living monuments to friendship seemed to breathe a real welcome. Tree planting should become a vital interest in every life, it is such a joy.

"It is said, you know, that as Adam fled from the Garden he paused a moment before the Tree of Life, plucked a branch and having reached the land of banishment, planted the twig at the door of his crude abode. There are people now alive who believe that portions of that tree were first used in the construction of the ark, then, repolished to greater splendor they found place in the temple of Solomon and still later formed the arm of the cross upon which Christ was crucified; all this shows that interest in a tree abides even when the story is worn with years and years."

Just here I ventured to halt the flow of tree lore by inquiring, "Are you the champion tree planter?" I used the term as an expressive one, but Miss Ackerman makes no such claim. "It is probably true," she replied, "that I have planted more trees than any other woman and in more distant places than either man or woman, for at this moment my trees are growing in all the countries of the world but three.

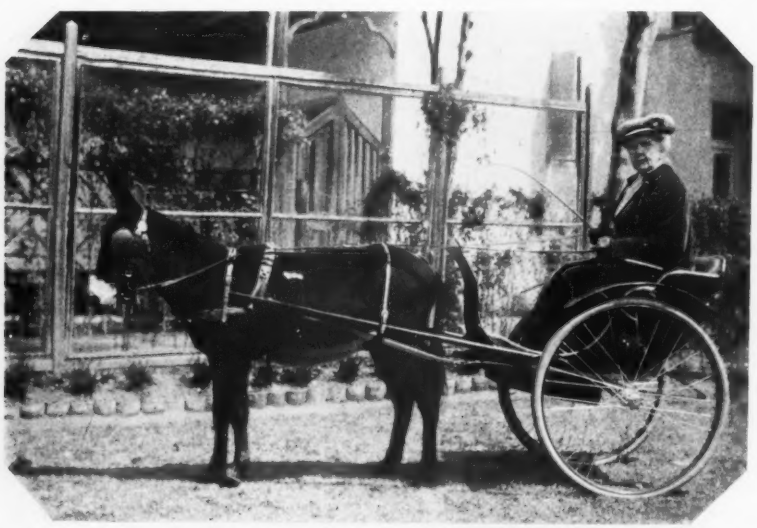
"But have you never heard of the real tree planter of all time," she exclaimed—"a man of course! Why, he counts his trees by millions. I want to meet him more than any living man. Millions! think of it! Four millions now stand to his credit and at sixty-three years of age he intends to plant ten millions more. If I gathered all of mine here in Johnson City they would be but a small park, for all told, they number but one thousand, six hundred, scattered pretty well over the entire earth's surface."

I inquired, "you have seen many noted trees probably: which have impressed you most?" The answer betokened the sentiment of a woman's heart, for it was no stately, awe-inspiring giant of which she spoke, but of broken and worn trees, eaten by time, reduced in size by the ravage of the years but more tenderly cared for, vigilantly protected and zealously watched than all other tree treasures of the earth. I noticed Miss Ackerman's voice grew rather soft as she slowly added, "the old olive trees in the Garden of Gethsemane, said to have been there when the prayer of agony ascended from the lips of the sorrow-stricken Christ.

"Of course," she continued, "the tree over the tomb of Confucius is of great interest. I traveled over Shantung in a rickshaw drawn with considerable discomfort by a small creature of uncertain ways, to reach the ten thousand-acre plot given to the Confucian family as a burying ground in which sleep seventy-eight generations of the noted sage. The tomb is in the open and marks the original resting place of Confucius. Over it spreads the branches of the oak from which Charles Dana secured an acorn. Later the same acorn was planted in the city of Washington and now flourishes as a memento of his trip."

MISS ACKERMAN AT THE TOMB OF CONFUCIUS
This shows the old mother oak tree from which Charles Dana brought the acorn, later planted in Washington, D. C.

A small tree has been planted recently over the tomb or more properly speaking beside the temple erected in memory of the wife of Confucius. This is probably the 'after thought' of some modern woman. I should have said while recalling Palestine that I rested under Abraham's tree on the way to Hebron after a visit to the tomb of Sarah. In Syria a visit to the tree of Mt. Lebanon led to wonderment as to how many of them ever reached the spot for the construction of the Temple of Solomon. Yes, and over there in India, somewhat out of the Holy City of Benares is the tree under which it is said Buddha preached his first sermon. As it is of the banyan family it may be quite possible that it is the continuation of the original tree, for they have a way of spreading that may be termed a continuation. This one covers nine acres. There are many other trees, easy of access, that are familiar to me but these are by far of most thrilling interest."



ON THE WAY TO THE TOMB OF CONFUCIUS
As Miss Ackerman humorously points out, she was drawn along by a "small creature of uncertain ways!"

Washington's Forest Fire Truck

By Erle Kauffman

ONE of the great outstanding features in modern fire-fighting methods and equipment is speed. The necessity of reaching a fire before it gets a vital grip on its prey has resulted in the development of devices heretofore not dreamed of. The hope of overcoming those few seconds on which the life of a fire depends has inspired those responsible for the tremendous task of fire suppression to utilize many unique ways of combating time.

It is of no little moment then, that the Washington State Division of Forestry is experimenting with what is unquestionably the best fire-fighting unit of its kind that has been developed. It is a forest fire truck, capable of traveling fifty miles an hour over highway or railroad. Exchangeable rims enable it to operate equally as well on highway or standard logging railway tracks, thus increasing materially its range of operation. But twenty minutes are required for the change.

THE FIRE TRUCK THAT WILL TRAVEL FIFTY MILES AN HOUR OVER HIGHWAY OR RAILROAD, SAVING HOURS IN THE TRANSPORTATION OF CREWS AND EQUIPMENT TO THE FIRE LINE

Experiments have shown that its effectiveness is not confined merely to reaching the scene of the fire, important as that is. A special pump, somewhat similar to modern city fire-fighting equipment and capable of delivering three hundred and fifty gallons of water per minute, is the most significant item of equipment. Such a flow of water is calculated to discourage the intent of the fire, while the truck's crew of ten men mop up with smaller hand pumps. The pump is of standard equipment and is operated by the truck motor through a specially constructed transmission, which utilizes the speeds of the regular transmission. It is provided with four one and one-half inch outlet connections and its delivery of three hundred and fifty gallons of water per minute is from ten to fifteen times the amount obtainable from the smaller pumps.

In addition the truck is equipped with four smaller pumps of various sizes to meet situations as confronted. It carries a 100-gallon portable, a 40-gallon marine, and 30-gallon and 15-gallon tripod pumps. With this pumping equipment water can be relayed for a distance of more than two miles. Three thousand six hundred feet of one and one-half inch hose is standard equipment. More than 700 feet of cable is carried and the truck is so equipped that it can be pulled out of holes and over obstacles by its own power to the extent of 25,000 pounds. Also, two winches are attached to the rear of the chassis for the purpose of clearing the roads of windfalls. Fire-fighting tools to equip thirty men and a complete cooking and mess outfit are included in the equipment. The body of the truck has a large compartment located in the rear and provided with folding seats which will accommodate a crew of ten men.

It carries a trained crew of fire-fighting experts, thus insuring maximum efficiency in making set-ups, operation of pump, stringing hose, development of relays or any gravity system that might be available. It was designed by officials of the Washington State Division of Forestry, the Washington Forest Fire Association and Len Edwards, of the Edwards Machinery Company. The truck is an assemblage of the very best equipment obtainable and every detail of construction was planned with the idea of carrying into the forests the advantages of city fire-fighting methods. In a recent test run the truck, carrying more than 8,000 pounds, including full equipment and fourteen men, performed with remarkable speed over a four and one-half per cent grade on the tracks of a logging railway and duplicated the feat over dirt roads with a greater grade.

Round River Yarns

IV. SLUICIN' ON THE ROUND RIVER

By Roland Henrionnet

"WALL, after thot log jam wint out the boss gits pretty nervous of what might be ahead of us on thot thar river. So he leaves the crew and cuts across country. He wuz gone a couple of days an' whin he gits back I seez a pretty worried look in his eyes." The old camp watcher filled his pipe and continued:

"'Boss,' sez I, 'Yer lookin' pretty worried. What's the trouble?'

"'Say,' sez he, 'Trouble isn't in it with what we've got ahead of us. Thar's a big turn in the river about five miles below us and thin a waterfalls thar of a hundred feet. Every log we've got will be busted to kindlin' wood whin it goes over thot falls.'

"Sez I to the Boss, 'Me duties as bull-cook are pretty light right now an' if ye can spare me fer a couple of days, give me six men an' six teams, I'll git ye out of this yere trouble. But don't send thot Swede cook along fer he'd jam the whole works with thim morning papers he calls pancakes. I'll do the cookin' meself.'

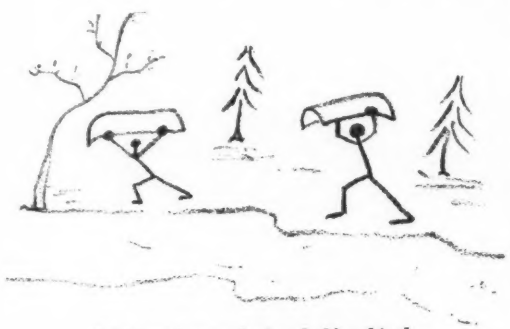
"'Alright,' sez the boss. 'But I don't think you can do anything. The logs will be at the falls before mornin'.'

"Sez the cook to me, after supper, 'This bane one yob you fall down on, by yimney.'

"'Cook,' sez I, 'ye are underestimatin' the abilities of the bull-cook again.'

"I takes the crew the boss had picked out for me an' cuts across the country to the falls.

"Sez I to the men, 'Now work fer yer lives fer the logs will be here in a few hours. Fall thim Norway an' White pine trees across her an' work fast. The rest of ye men roll thim boulders down from the banks up thar an' we'll dam her up.' In about three hours we had her pretty well filled up and thin the teams came up with the holler log, we had towed down from the camps behind the wanegan. We rolled the holler log into the center of the dam, with the butt end at the top an' the small end in the river at the bottom of the falls. She jist dropped into place whin the furst logs came into sight up the river. I handed a pickaroon to each of the men on each side of the holler log an' they begin sluicin' the logs through her. It took us nearly a week to git the logs through but nary a one lost a sliver.



"An' each one had a half a birch-bark canoe on his shoulders"

"It war thar while we war sluicin' thim thar logs through the holler log that I meets two Frenchmen coming up the river. They war both carrying big packs an' each one had half a birchbark canoe on his shoulders. I cud hear thim half a mile off they wuz arguin' so loud.

"Sez I to the Frenchmen, 'ye must of had sum terrible trouble on yer way up the river. Prehaps ye struck a rock an busted yer canoe. Come on over to the wanegan. We haven't got much of a cook but I'm the bull-cook an' the men git along pretty well.'

"Wall, those two Frenchies had jist got thar packs off whin they started to fight an' whin the benches an' tables an' tin dishes begin to git spread aroun', meself an' the cook took a hand an' finally got thim parted.

"Sez I to the Frenchmen, 'Now tell us what's all this row about. An' thin between the two of 'em, wavin' thar hands, an' me stopping another fight they told me how it all happened.'

"Thot fall, thim two Frenchmen had wint fifty-fifty on a grubstake an' outfit, wint down the river an' picked thimselves out a good timber claim apiece. They helped each other build cabins, an' war gittin' along fine until Pierre saw a black and white animal near his cabin an' sed it war a pole-cat. Andre swore it war a young bar. To settle the argument Pierre caught the animal and carried it over to Andre's cabin. Wall, whin thot thar skunk got through dispensing his pertective odor, Andre wint over to live with Pierre. Thin they started arguing whose fault it war, an' by spring, every time they met each other thar war a rough an' tumble fight. The only thing thot they could agree on war on gittin' out of thar. So one day they started dividin' up thar stuff, an' as nather would sell his share they cuts the canoe in two an' starts up the river with thar packs on thar backs an' the pieces of the canoe on thar shoulders. It war jist a short time after this thot I kills thot buffalo. I'll tell ye about it next time yer here."

(To be concluded)

When these Four Men Meet– You May Save Thousands in Shipping-Waste

AFTER a half hour spent together these four men may have a startling story to tell you—about shipping waste in your plant.

Thousands of dollars are being saved by many concerns after investigations which proved that excessively *heavy* woods were going into crates.

It will cost little; it may save much to bring together these four men:

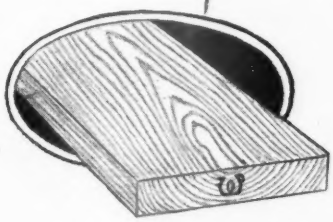
Your Purchasing Agent. It is his job to buy crating lumber of the right kind, grade and weight to minimize outgoing freight charges—save labor and waste.

Your Traffic Manager. He will furnish rates and records on outgoing shipments—very necessary in arriving at *final* costs of crating lumber.

Your Packing Foreman. He can point out the wastes due to hard-to-work woods that split easily when nailed.

The Weyerhaeuser Man. He knows crating and crating lumber, its weights and characteristics. He can specify the grades best and most economically suited to your purposes and furnish prices. He has uncovered a lot of shipping wastes. He is a good man to know.

Write us for complete details of a crating lumber session.



Weyerhaeuser Crating Woods

A continuous dependable supply of 8 light-weight woods—one to fit each packing need. Abundant strength—easy working—nail without splitting.

Cut-to-size Crating for Standardized Crates

If you can standardize your crates, you will save additional money with Weyerhaeuser *cut-to-size* crating lumber—bundled, ready to nail up. No freight on waste. No costs for cutting. Less storage space. Rapid packing.

Weyerhaeuser Light-weight Crating Woods

Choice of 8 kinds - Light but strong - Work easily - Nail without splitting

WEYERHAEUSER FOREST PRODUCTS

SAINT PAUL • MINNESOTA

Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose. Also producers of Idaho Red Cedar poles for telephone and electric transmission lines.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 806 Plymouth Bldg., Minneapolis; 208 So. La Salle St., Chicago; 2563 Franklin Ave., St. Paul; 1600 Arch St., Philadelphia; 285 Madison Ave., New York; 812 Lexington Bldg., Baltimore; Portsmouth, Rhode Island; 2401 First National Bank Bldg., Pittsburgh; 1313 Second National Bank Bldg., Toledo.

AROUND THE STATES WITH THE AMERICAN FORESTRY ASSOCIATION

Stevenot Head of New California Department

Fred G. Stevenot, pioneer mining man, has been appointed by Governor C. C. Young of California, to head the new State Department of Natural Resources. Heads of the divisions of forestry, parks, mining, and fish and game, which are grouped under the new department, have not been named.

Mr. Stevenot has demonstrated an active interest in the forestry and park movements. He is keenly interested in securing approval at the next election of the $6,000,000 bond issue for the purchase and development of park areas. He has served two terms in the State Assembly and was a candidate for Congress in 1926.

In making the appointment, Governor Young said: "Mr. Stevenot will bring to the State government a plan for comprehensive development of the park systems, and strengthening of the policies of conservation."

Income From Pennsylvania State Forests

During the past twenty-seven years the income from the State Forests of Pennsylvania has amounted to $638,691.59, of which $375,034.10 have been deposited, as provided by law, in the State School Fund.

The first income from the State Forests was received in 1900, two years after their establishment. It amounted to $1,227.87. By 1910 the annual income had increased to $9,176.09 and by 1920 to $50,633.80. It reached its high mark in 1924 with $88,199.56 and in 1926 totalled $50,943.44. The annual income of the past 10 years, ranging from about $25,000 to more than $88,000, was exceeded in the period 1923-25 through the salvaging of large amounts of blighted chestnut which had it not been removed would have been a total loss. The income of this 3-year period alone amounted to $236,899.94.

Of the $50,943.44 received from the State Forests in 1926, $15,389.20 were received from the sale of major forest products, such as lumber, mine props, posts, ties, and cordwood. During that year almost half a million board feet of lumber were sold, 108,097 mine props, 22,926 posts, 22,062 ties, 2,678 cords of chemical wood, and 1,827 cords of fuelwood. From the leasing of individual camp sites the receipts during 1926 were $14,588.10. The sale of stumpage returned $4,822.05 and minerals $6,193.08, while lesser amounts were received from water leases, rights of way, and other rentals.

WISCONSIN PASSES FORESTRY TAX LAW

Following the signing by Governor Fred R. Zimmerman of the measure which changes the method of taxing Wisconsin's forest lands, a newly organized conservation commission has been named. Those appointed by the governor are O. C. Lemke, F. L. Gilbert, E. M. Dahlberg, William Mauthe, A. W. Icks and Eugene Wengert.

An interim committee of the legislature to study taxation, replanting and fire protection of State lands has also been appointed. This committee will make an investigation before the opening of the 1929 legislature. An appropriation of $5,000 has been made for this work.

The new tax measure signed by the governor provides for a severance tax on growing timber and relieves the owner of growing timber from taxation during the growing period. The land is taxed annually but taxes on the timber are deferred until it matures. The purpose of the measure is to make reforestation economically possible in Wisconsin.

The National Arboretum

With a prospect that $300,000 to purchase a site for the National Arboretum in the District of Columbia will be included in the next Agricultural Appropriation Bill, plans for development are being worked out.

It is expected that 400 acres known as the Mount Hamilton and Hickey Hill tracts along with the Anacostia River flats will be purchased. Four hundred acres of marsh land, it is thought, can be reclaimed by the Army engineers. Specimens from all states in the Union as well as from foreign countries will be included in the Arboretum. Many of these will be of special interest in the development of forestry. An experimental station or laboratory for the fundamental study of trees and shrubs will be included. According to Frederick V. Coville, botanist of the Department of Agriculture, some experiments will be made in the breeding of forest trees with the idea of developing faster growing types.

The location of the Arboretum at Washington, the meeting place of the flora of the North and South, will afford conditions for an unusual number of plants. Washington is also the largest center of botanical activity in the world, supporting a Botanical Society of 168 professional botanists.

Park Executives to Meet

On September 25-29, the American Institute of Park Executives will hold its annual convention in Philadelphia at the Benjamin Franklin Hotel. Meeting with them will be the American Association of Zoological Parks and Aquariums, the American Park Society.

Confer on Arkansas River Control

Construction of well distributed reservoirs large and small, terracing of sloping farm land, reforestation of headwaters and other measures as well as levee maintenance, were advocated by two hundred interested men who gathered at Tulsa, Oklahoma, July 14-15 to confer on Arkansas River Flood Control. The conference was called by the Tulsa Chamber of Commerce and by Congressman E. B. Howard, representing the first congressional district of Oklahoma.

More than 200,000 acres of farm land are now being terraced in the Mississippi Valley as a means of conserving moisture and holding soil with resulting control of a considerable run-off of rainfall, according to Bradford Knapp who addressed the meeting. E. A. Sherman of the Forest Service, declared that much of the volume of every flood was soil and debris rather than water and pointed out the power of forests to deter soil washing in the upper reaches of watersheds.

Army engineers present expressed belief in the effectiveness of other measures as well as engineering works to be sought and used in control work. H. H. Bennett, of the Bureau of Soils, told of the soil losses within the Mississippi drainage through floods. Congressmen from the region who were present included Mr. Howard, Wm. W. Hastings, of Oklahoma, Wm. J. Driver and Heartsill Ragon of Arkansas, Willis G. Sears of Nebraska, Joe Manlove of Missouri and W. H. Sproul of Kansas.

A resolution was adopted calling upon Congress to use all means available for controlling Arkansas River Floods as a Federal responsibility and to see that all Mississippi River Control was not concencentrated on the main river only.

National Lumber Manufacturers Outline Forestry Policy

Speaking for the forestry committee of the National Lumber Manufacturers Association at the mid-summer meeting of the directors in San Franciso early in August, George S. Long, chairman of the forestry committee, proposed a set of resolutions which were unanimously adopted.

The statement on "Reforestation Responsibility" calls attention to the new interest in forest crop production by lumbermen and forest owners in all regions. Pointing out the various conditions imposed by taxation, fire risk, market for young growth production and peculiar situation of land ownership, mature timber supply and possible duration of operating life, the division of responsibility between public and private agencies is analyzed thus: "The extent to which the public must assume this cost and burden will, however, be governed much by the extent to which the public makes private forest growing possible by removing restrictions of risk and of confiscatory taxation." The forestry industry is put on record as supporting jointly with the public, a policy of encouraging forest growing to the fullest extent.

The resolution on "Forest Taxation Reform" calls attention to the unsatisfactory procedure in taxing forest property either as uncertain in its tendencies and dependability, or so unjust that it amounts to confiscation. The alternatives of the familiar yield tax or sound annual taxation of land alone are suggested depending on the need of the local communty for immediate tax revenue, together with the ability of the land to pay. The industry is put on record against general commitment to any standard remedy, but in favor of unceasing effort for understanding of the principles covering wise local tax reforms as a means of encouraging private forest enterprise.

A resolution of forest protection commends President Coolidge and Director Lord of the Bureau of Budget for organizing interdepartmental cooperation to reach a balanced program of Federal responsibility in the National Forest fire program. They are also commended for recommending more generous provision for fire prevention this year. The Federal Government is called upon to continue suitable financing and harmonizing of Federal cooperation with State and private agencies under the Clarke-McNary Law; control of the fire hazard on the public domain as well as other Federal holdings; and fire weather warning service by the Weather Bureau. The same correlation is suggested covering insect and disease control so that all forest agencies, private and public may assume their own responsibilities.

Forest research is covered in a resolution endorsing the MacSweeney Bill which calls for a comprehensive program of Federal forest research. The industry is put squarely behind the effort to secure greater fundamental knowledge as a means of keeping the forest policy of all agencies, serviceable and up to date.

Possible "conflicts between public and private policies" are mentioned as likely to arise from the regulatory authority of the States and Government and from the responsibility of forest owners to avoid hazarding public and industrial interest by marketing timber in a manner inconsistent with the highest permanent good. Attention is called to the possibility of unfair competition through the marketing of tax-free State and Government timber at times when over-production in the general lumber market will result. At the same time it is recognized that under some conditions the market may be stabilized by bringing public timber supplies into relation with private supplies. The industry commends the state-

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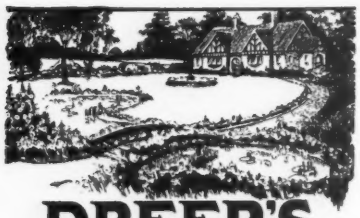

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ment of the Secretary of Agriculture that National Forest timber will not be unnecessarily crowded on the market anywhere, and urges the discouragement of new projects for its exploitation anywhere, when the product seems likely, without serving any real need of good forest management, to go into general markets already crowded by over-production.

American Forest Week Committee Reports

"Forest Week is an international institution for promoting better citizenship" says the 1927 report of the American Forest Week Committee of which Hon. Frank O. Lowden is chairman. "It represents no group or interest but belongs to every man, woman and child in the United States and Canada who has concern for the preservation and propagation of the greatest of our common heritages—the forests."

One hundred national, regional and local associations of various kinds participated in this year's observance of American Forest Week, and from the Rio Grande to the Arctic the effect has been greater than in any of the previous five years of its history. It is estimated that several million young trees were planted and to keep before the public some reminder of the observance, more than two million pieces of literature were distributed.

California Fights Blister Rust

In the war on the blister rust disease which menaces the valuable white pine timber of the country, California has adopted a law which brands as a public nuisance the cultivated black currant, the intermediate host of the causative fungus of the disease. The act was passed by both houses of the state legislature and has been signed by Governor Young.

Idaho and Oregon, whose white pine forests are in greater jeopardy at present from the rust than the sugar pine forests of California, have existing laws for the eradication of the black currant.

Extensive Reforestation in New York

Promoted by paper mill and water power corporations, the New York Development Association will be incorporated soon with a program which calls for extensive utilization of the natural resources of the Adirondack mountain region, including both timber and hydro-electric power, says the *Paper Mill*. One of the chief features of the project is the reforestation of a million acres of cut-over and unused land.

The territory in which the operations of the association are to be principally conducted embraces the counties of Albany, Clinton, Essex, Franklin, Fulton, Herkimer, Jefferson, Lewis, Montgomery, Oneida, Onondago, Oswego, Rensselaer, Saratoga, Schenectady, St. Lawrence, Warren and Washington.

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New Hawaii Forests

A survey of the proposed Schofield Barracks forest reserve on the east slope of the Waianae range, near Kaala, has been started by the Board of Commissioners of Agriculture and Forestry, according to the *Hawaiian Forester and Agriculturist*. Work is progressing on the surveys of the new Hamakua reserve, and on the additions to the Hilo and Puna forests. Execution of the documents which will turn over control of the James Campbell Estates to the Honouliuli and Kahuku forests has been completed. This acquisition will exceed several thousand acres.

New Hampshire Forestry Meeting

The fifteenth annual forestry conference of the Society for Protection of New Hampshire Forests will be held at Dover, New Hampshire, August 31 to September 2. The meeting will be held jointly with the New Hampshire Forestry Commission and the Appalachian Mountain Club.

The conference will be opened at the Cocheco Country Club, at Dover, by Colonel William B. Greeley, Chief of the United States Forest Service. Other speakers at the opening ceremony include Professor J. W. Toumey, of the Yale Forest School; William G. Howard, State Forester of New York, and Joseph S. Illick, State Forester of Pennsylvania.

On September 1 the meeting will move to Parker Mountain where Philip P. Wells, formerly Assistant State's Attorney for Pennsylvania will preside. Here Harris A. Reynolds, Secretary of the Massachusetts Forestry Association, will tell of the results of the forest fire prevention experiment on Cape Cod, and the work of the 4-H Clubs will be sketched by Kenneth E. Barraclough, Extension Forester of New Hampshire. Other speakers will be John H. Foster, State Forester of New Hampshire; L. E. Newman, State Director of Blister Rust Work, and Professor William M. Harlow, of the New York State College of Forestry. The meeting will conclude with a tour of the Pawtuckaway Mountains, one of the most attractive State reservations in New Hampshire.

Connecticut Club Studies Forestry

The Saturday Club, a federated women's organization of New London, Connecticut, has just completed its first year's study of forestry with such success that it was voted to continue the study another year through reviews of AMERICAN FORESTS AND FOREST LIFE. Over the past year the organization has had presented many papers on forestry and conservation. Bird sanctuaries, game preserves, street and highway trees, forest products and the common names of trees were included in the study.

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Mississippi College Adds Forestry Course

The state teachers' college at Hattiesburg, Mississippi, has included a department of forestry in its curriculum. George S. Perry has been appointed head of the new department. In a recent address before the entire student body Dr. Perry told of the major benefits to be derived from the practice of forestry. He expressed his belief that many other colleges in the state would soon provide for forestry courses. Roy L. Hogue, state forester, was present and endorsed Dr. Perry's statements.

New Jersey Weathers Spring Fire Season

In spite of a late Spring and severe fire conditions, the New Jersey Forest Fire Service held the burned area in the state between January 1 and June 30, 1927, down to 26,583 acres. There were 781 fires averaging 30 acres; only 4 of these fires burned over night. This is New Jersey's banner fire protection record.

Play Ball!

The great American game "baseball" uses its share of timber. White ash is now the sole possessor of the bat market. The Spalding Company, Chicago, has an immense factory there with a capacity of 3,000 bats a day. They maintain a lumber stock sufficient to make 900,000 bats. The lumber stock must be air-dried for two years before being turned.

Naval Stores Statistics for 1926

According to statistics compiled by the United States Bureau of Chemistry and Soils, industrial concerns using turpentine and rosin in their products consumed during 1926 a total of 5,617,049 gallons of turpentine and 984,085 barrels of rosin, together with 52,637,739 gallons of mineral oil thinners. Trade estimates indicate a production of approximately 510,000 casks of turpentine, equivalent to 25,500,000 gallons, and 1,700,000 round barrels of rosin.

Vermont Forestry Association Elects Officers

G. H. Boyce of Proctor, Vermont, has been elected president of the Vermont Forestry Association, succeeding Professor K. R. B. Flint. He will assume his new duties immediately. Senator Wallace H. Gilpin of Barton, Vermont, becomes the new vice-president, filling the vacancy caused by the resignation of Mortimer R. Proctor. Mr. Proctor becomes a member of the Executive Committee, succeeding J. J. Fritz of Middlebury. Senator W. Arthur Simpson of Lyndonville, was re-elected to the Executive Committee.

John A. Fletcher of Middlebury, was re-elected Auditor for a term of two years and Walter Middlebrook was re-elected a Trustee of the Permanent Fund for a period of three years. C. W. Watkins of St. Albans, was elected a County vice-president. The remaining officers of the association were re-elected for one-year terms.

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October 8, 1926

Mr. George Van Yahres, President
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My dear Mr. Van Yahres.

We have received your statement of the actual cost and value of the tree surgery work which you performed on the original trees planted by Thomas Jefferson at his home, Monticello, situated at Charlottesville, Va. Your statement shows not only a very moderate charge for your service but we find that you very patriotically donated to Monticello a considerable portion of the value of the work. The balance has been paid to you by the Committee of the Garden Clubs of Virginia which raised the special fund for this purpose.

When the Thomas Jefferson Memorial Foundation obtained legal title to Monticello and took possession of the property we found that the trees had been planted there by Thomas Jefferson almost a century and a half ago were in very poor condition. We were very pleased, therefore, when the Garden Clubs of America brought the matter particularly to the attention of the Garden Clubs of Virginia. The ladies promptly organized a very efficient Committee under the Chairmanship of Mrs. William R. Mayle of Greenwood, Va.

This Committee made a thorough investigation and chose your organization for the work which immediately proceeded under your personal supervision. I was very much interested in seeing the photographs of the enormous cavities that were found in some of the trees and later I found considerable delight in showing the remarkable tree surgery work which you had performed on these trees to Governor Harry Flood Byrd of Virginia, and to Secretary of State, Frank B. Kellogg, and the other distinguished guests who visited Monticello on July 4th this year. The Committee of the Garden Clubs of Virginia followed the progress of your work very carefully and reported to the Foundation that they were thoroughly satisfied with your accomplishment.

On behalf of the Board of Governors of the Thomas Jefferson Memorial Foundation I wish to extend to you our sincere compliments on the splendid work which you have done in saving the Jefferson trees and I assure you that we are deeply grateful for your donation of a large part of the actual value of this work.

Assuring you of our deep appreciation, I am

Very truly yours,

SGG:K.L.

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The trees treated in the spring of 1926 were inspected in the fall and found in excellent condition and healing rapidly. Just recently the following report was received:

"All trees are in good general condition and cavities are healing nicely."
—(Signed) Thomas L. Rhodes, Superintendent at Monticello.

Forestry Research to Aid British Colonies

By A. Edward Hammond

Valuable research work is being carried out by the Imperial Forestry Institute at Oxford, into the identity of trees for the timber-exporting Colonies and Dominions of the British Empire. The wood structure section is at work on timber and other material sent in by the respective forest services, and the research departments are engaged on the *Mora* of Trinidad, a wood of great durability used for ship-building, railway sleepers and paving blocks. The tree grows in easily accessible places in close proximity to the largest rivers, and reaches 150 feet or more in height, and specimens have been found by collectors, 7 feet in diameter, at 20 feet from the ground.

The white *Mora* is the best-known variety, but red *Mora* and grey *Mora* are also found in similar places, and the authorities in Trinidad have asked the Institute whether these are the same trees known by different local names, and, if not, what the differences are, and how far they may be used and exported as having the important qualities of the true *Mora*.

The botanical section of the Institute is analyzing new species of West African mahogany sent in from the Gold Coast, among which are new species of *Berlinia, Sarcocephalus,* and *Talbotiella*. The latter is a heavy foliage tree which often forms a belt between the savannah forest and the rain forest, and if it proves of commercial value, it is likely to extend considerably the area available for timber exploitation, and the results of these analyses when communicated to the forest services concerned should have an important bearing on the areas selected for forest reserves.

Forest Planting in New Hampshire

Reforestation on state lands in New Hampshire has been completed for the 1927 season, and according to the State Forestry Department, 153,425 trees were planted. The following species were set out on seven different tracts: white pine, 73,500; red pine, 34,500; white spruce, 29,275; white ash, 13,450; poplar, 2,000; sugar pine, 700.

The planting of sugar pine was in the nature of an experiment as reforestation with this species has never before been attempted in the state. The seed came from Arizona and New Mexico and the trees were raised in the state nursery.

Fire-Weather Forecasts on Pacific Coast

Increasing realization of the important role the weather plays in the forest fire hazard has led the Weather Bureau of the United States Department of Agriculture to establish a systematic forest fire-weather warning service in several sections of the country, and regular forecasts are being sent out to apprise foresters and forest owners of dangerous fire-weather so that they may shut down logging operations and slash burning, and mobilize fire-fighting units with the least possible delay.

In the Pacific Coast region, where some of the most valuable forests in the United States are situated, the fire-weather warning work has been under way for some time. Fire-weather forecasts are issued twice daily by the Weather Bureau and are disseminated by telegraph to important key points, by radio and by newspapers. The radio broadcasting of these forecasts is one of the most recent developments, and fire-weather bulletins now are being sent out from sixteen Pacific Coast and Northwestern stations.

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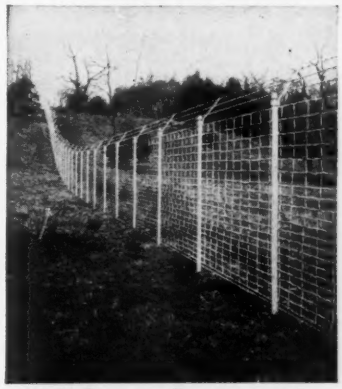

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Exotic Trees for Forest Planting

(*Continued from page* 535)

its branches for very long periods when it stands in the open. I have seen it in some forest plantations, where its lower branches are killed by the thick growth but they do not break off freely. In plantations made by the Cleveland Cliffs Iron Company near Negaunee, Michigan, about fifteen years ago, the Norway spruce has not proven successful. Some of the trees have been so much injured by the gall mites that they are little more than stubby bushes.

The Scotch pine has been almost as extensively planted as the Norway spruce, and it is one of the trees, with the Austrian pine, that can be depended upon to grow in unfavorable situations and at the sea shore successfully. Scotch pine, however, does not make good trunks as a rule. It does have much landscape value, however, on account of its flattened top that many times takes on the aspect of the very picturesque Italian stone pines. It furthermore has a value in the warm reddish colors of its bark, and in the decided picturesque outlines that are often taken by its branches. It undoubtedly has values on account of its adaptability for poor soils and exposed position. I have seen this reproducing itself from seed in the edge of woods, in open lands, on the Fay estate at Woods Hole.

The Austrian pine is quite as adaptable as the Scotch pine and it makes straighter trunks, but it is a slow growing tree as compared with other varieties. It approaches maturity at a rather early period but it does not give much promise for timber when compared with our native red pine—an outstanding tree, considering its vigorous growth and its freedom from disease.

In some places, especially on light, sandy soil, the Corsican pine seems to give considerable promise. There is one very good specimen on Cape Cod that I have noticed, and I have also used it at Pinehurst, North Carolina, with some degree of success, although here it does not seem to make a really good tree for forest plantations. The deodar cedar, however, does give promise of high forest value in North Carolina, if one may judge from the fine specimens at Fayetteville on a private place in the town. These specimens are over two feet in diameter, about seventy feet in height, with tall, straight, clean trunks for possibly forty feet.

The Bhotan pine, *Pinus excelsa,* has grown very rapidly at Pinehurst but seems to have a rather short life period. Trees that I have seen on private estates about Philadelphia give promise of longer life, and better forest characters.

The Scotch larch in plantations that are probably sixty to seventy-five years old in North Andover, Massachusetts, and on the Massachusetts Agricultural College grounds at Amherst are making good trees with upright, fairly clean trunks. At this age, however, they seem to be approaching their maturity as they are not showing the rapid growth which they made at an earlier period.

Of native trees, *Picea concolor,* judging by the fine upright specimens on the Fay estate at Woods Hole, and trees of a more recent period that are exposed to the salt water bays on the Massachusetts shores seems to be a very good forest tree. I believe it has more promise in this respect than the Douglas fir, and certainly more than the Rocky Mountain blue spruces that are becoming very subject to the bud louse.

I have touched only briefly and incidentally on the landscape value of these trees, as elements of landscape in forest plantation, because it is a subject that would take up much more space than is available in these random notes.

Pulping Qualities of American Woods Summarized

The conscription of other woods to take the place of the rapidly diminishing "old guard" of paper making—spruce, fir, and hemlock—is described in Department of Agriculture Bulletin 1485-D, "The Suitability of American Woods for Paper Pulp."

The desirability of finding species to supplement the waning supplies of spruce, brought forcibly to public attention by the severe shortage of materials experienced by the paper industry in 1919, has been further emphasized by the large number of eastern mills that are facing eventual shutdown because of lack of raw materials, and by the relative immobility of paper mills generally. At present the spruces, firs, and hemlocks are drawn upon for 77 per cent of the wood consumed by the paper industry, spruce alone contributing 55 per cent.

Of especial interest to timber owners in the South is the statement in this bulletin that the sulphate process applied to the southern pines in combination with the gums and similar hardwoods of the South has been found to yield pulps which, bleached by proper methods, may be used in the manufacture of book, magazine, and similar high-grade printing papers at reasonable manufacturing cost.

The bulletin describes standard pulping methods as related to wood properties and explains the suitability of 94 kinds of hardwoods and softwoods for pulping by both chemical and mechanical processes, summarizing the results of research begun by the United States Forest Service in Boston in 1906 and carried on at the United States Forest Products Laboratory after the establishment of that institution at Madison, Wisconsin, in 1910.

Heavy Deer Kill in Minnesota

The heaviest kill of deer ever recorded in the history of Minnesota has been announced by J. F. Gould, Game and Fish Commissioner. The 1926 returns show that 23,691 deer were bagged by hunters, including 4,801 fawns and 7,386 does. The returns were procured from the compulsory system of hunting license reports in force in the State.

According to Commissioner Gould, the records do not indicate any serious depletion of deer in Minnesota, although the percentage of female and immature deer killed is exceptionally large. He maintains, however, that a buck law well enforced would cut the deer mortality practically in half and would probably afford opportunity for hunting every year instead of the alternate open and closed years.

Biological Section Established at Madison

Establishment of a new section to work on biological problems at the Forest Products Laboratory, Madison, Wisconsin, has been announced by the Forest Service of the United States Department of Agriculture.

The new laboratory division, which will be known as the "Biological Section," will be under the direction of Carlos G. Bates, recently director of the Rocky Mountain Forest Experiment Station of the Forest Service. It will be a distinct section of the Forest Products Laboratory, and its work will be coordinated with the other research sections such as Timber Mechanics and Timber Physics. The program for the section will be considered and decided upon annually as a part of that of the laboratory.

In general the field of the Biological Section will cover the activities of the Forest Products Laboratory which lie nearest to the work of the Forest and Range Experiment Stations of the Forest Service. For these stations it will serve also as a central laboratory. This is the outgrowth of a plan which has been under consideration for many years but which it has not been possible to put into operation before the current fiscal year.

California Gets Experimental Rabbit Farm

Fontana, San Bernardino County, California, has been selected by Secretary Jardine as the location of the new experimental rabbit farm, which is soon to be established by the Department of Agriculture in cooperation with the National Rabbit Federation and the Fontana Farms Company. The Bureau of Biological Survey, under a cooperative agreement with these two organizations, will finance the operation of the farm, and plan and conduct the experimental work to be done for the improvement of the rabbit raising industry throughout the country.

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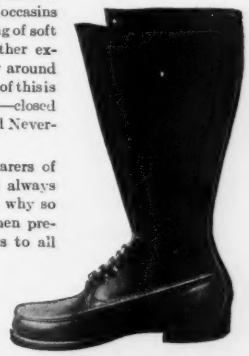

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Cause of "Duck Sickness" to be Studied

The problem of the great mortality among wild fowl in our Western States, which has puzzled biologists and sportsmen for a number of years, is to receive renewed and intensified study during the present season by the Biological Survey of the United States Department of Agriculture. C. C. Sperry, assistant biologist of that bureau will be sent at the first indication of serious duck mortality, to make a detailed investigation of the malady in order to determine the causative agent wherever possible.

The "duck sickness" is recognized as an outstanding menace to waterfowl in Western States. Although alkali poisoning has been found by the Biological Survey to be the cause at Great Salt Lake, Utah, and at some other western points, bird mortality has been encountered in other localities where the cause has not been definitely determined. For instance, it is not known to what extent alkali poisoning has resulted in the death of many thousands of wild ducks and other birds at Tule Lake, California, the Government Sump at Klamath Lake, Oregon, and at Malheur Lake, Oregon. There have been times when all circumstances pointed to alkali poisoning, and on other occasions investigations have been unable definitely to associate the trouble with the presence of these poisonous salts. Mr. Sperry will undertake to determine, through careful experimental work, whether the causative agent rests in alkaline salts, and if so he will make recommendations for practicable remedial measures.

Forest Receipts in Northwest Exceed Million

Receipts of $1,309,173 are reported by the Forest Service from the twenty-two National Forests of Oregon and Washington during the fiscal year 1927, which ended June 30 this year.

The bulk of the money came from timber sales, which show a total of $1,092,608. Grazing fees rank next with $169,285. Summer home site permits and other forms of special use stand third with $24,131. Other sources of receipts are waterpower and various forms of trespass.

Of the twenty-two National Forests the Olympic in western Washington leads with a total of $289,814, while the Crater National Forest in southern Oregon is second with $222,280. Two other forests exceed the hundred thousand mark for the year—the Deschutes with $145,207 and the Wallowa with $106,057.

Twenty-five per cent of these receipts are returned to the states and counties for the road and school fund, and an additional ten per cent is made available for road and trail work by the Forest Service.

Forest Fires and Fertilizer

An estimate has ben made that the yearly crop of oak leaves on an acre is worth $5.80 for fertilizer. The crackling bonfire of leaves, burning on some suburban backyard removes a detriment to the beauty of a smooth lawn, but when these same leaves are consumed in a raging forest fire, much valuable fertilizer goes up in smoke. And this does not take into account the indirect damage resulting from the removal of the spongy protective soil covering with the consequent packing of the soil and damaging erosion from run-off of rain-water on hillsides.

New Forest Movement in England

By A. Edward Hammond

Following the controversy excited by the commencement of fellings in the New Forest, the Forestry Commission have asked the verderers of the New Forest, the New Forest Association, the National Trust for Places of Historic Interest of Natural Beauty, and the Commons and Footpaths Preservation Society, to submit the names of persons from whom the Commissioners may make appointments to a small advisory committee. This committee will be representative of the four bodies who are interested in the preservation of the New Forest, and will advise the Forestry Commissioners as to the selection and special treatment of areas within the enclosures of the New Forest which are of distinct picturesque interest.

Although the Forestry Commissioners are putting forth these efforts to work in harmony with those bodies which have interests in the New Forest, either as residents in the locality, or as champions of natural beauty, the actions taken by them in connection with the felling or clearing of trees in the enclosed sections of the New Forest have been perfectly legal. Their authority is The New Forest Act of 1877, which is still in full force. Section 6 of this act authorizes any parts of lands to be inclosed, planted, laid open, replanted, or re-inclosed; provided that the whole quantity of such lands under inclosure does not exceed at any one time sixteen thousand acres. It also provides that in cutting timber or trees for improving the woods, or for sale, care shall be taken to maintain the picturesque character of the ground, and not wholly to level or clear the woods, but to leave a sufficient number of the most ornamental trees; and to keep the woods replenished by protecting the self-sown plants, or by planting trees in the vacant spaces, having regard to ornamental as well as profitable use.

With the transfer of the Crown Woods, the authority of the Crown was, of course, passed on to the Forestry Commission, and Lord Clinton, speaking for the Forestry Commission, has recently pointed out that their object in felling the trees was to let in sufficient light and air for the young growth.

The Joshua Tree

By Janet Gargan

THE Joshua tree, commonly found in the Mojave desert, is a species of yucca—an ugly cousin to the prized yucca *Whipplei*. The latter, which has such lovely waxen blooms, is popularly known as the "Spanish Bayonet," and to the Spanish-Americans as "The Candle Stick of Our Lord." The Joshua tree was given its unusual name by Mormon pioneers, who, many years ago crossed the desert and settled in San Bernadino County, California.

The Joshua tree is the least attractive of all trees,—in fact, a regular nightmare of a tree. An author has written of it:

ON THE DESERT THE JOSHUA TREE RAISES ITS WEIRD, FANTASTIC ARMS TO THE SKY

"Nothing in the vegetable world is more unprepossessing than this scarecrow, all knees and elbows with handfuls and mouthfuls of daggers."

The young trees have no branches until they reach the height of ten or twelve feet and then send out limbs that resemble clumsy clubs. Great thorns take the place of leaves, and the blooms are a sickly, greenish yellow, never fully opened, and having an unpleasant odor.

The Joshua tree is not useful to the desert, for it casts no shade as does the mesquite or ironwood, nor is it good for firewood or building material like these trees. Its wood is fibrous and spongy. It is not a refuge for bird life as is the fan palm of the desert—it bears nothing in the shape of food for birds, insects or animals. The desert wren builds her nest among its thorns because they protect her young. The woodpecker drills a hole for a home and the elf owl often dispossesses him—other birds shun this tree.

The Joshua tree has one peculiar use—it is ideal for surgeon's splints. After being soaked in water, it easily conforms to the injured limb where it is bound, and being porous, admits of a circulation of air. As the wood is fibrous and pliable, it is also used in the making of artificial limbs.

British Forestry Furnishes Journal

Volume 1, Number 1, of *Forestry*, the Journal of The Society of Foresters of Great Britain has just appeared. The Society was organized in 1925 and its inaugural meeting was held at Oxford in August, 1926. The council for 1927 announces that the Journal will be published annually in the first instance, but the number of issues per annum may be increased later. It will contain the results of practice and research in the growing and utilization of timber, including some of the basic sciences. The first number of *Forestry* contains sixteen technical articles on British and continental forestry besides a number of carefully prepared reviews. An article by the editor, H. M. Stevens of the Imperial Forestry Institute, Oxford, entitled "Silviculture of Conifers in Great Britain," contains interesting notes on Douglas fir, the one North American species which has been widely planted in the British Isles. Examples of young successful plantations on sands and gravels are mentioned, with the prediction that the species may be more valuable in the future than is now recognized.

Pine Institute to Jacksonville

A new office in the Barnett National Bank Building, Jacksonville, Florida, has been opened by the Pine Institute of America with Carl F. Speh as Secretary-Manager.

Among the new projects planned by the institute is the establishment of graduate fellowships open to those who have had a course in advanced chemistry and who will specialize in the study of rosin and turpentine. The industry looks to these men and to research work under way at Mellon Institute to find new and varied uses for pine tree products. A. F. Bullard of De-Funiak Springs, is President of the organization which formerly had its offices at Gull Point, Florida.

Trees for Slopes of Mt. Mitchell

With the completion of the spring tree planting program of the North Carolina Department of Conservation and Development, it has been announced that 1,700 spruce and balsam seedlings were planted on the slopes of Mt. Mitchell, the highest mountain peak in eastern America. Since the planting program was started in 1923,

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more than 10,000 seedlings have been set in the vast mountain area burned over in 1915.

Trees planted several years ago are reported to be growing steadily and showing promise of recloaking the areas where the fire left only charred and broken trunks of trees. It was also announced that a lookout tower had been erected on the summit of the mountain.

SENTINEL ROCK, UTAH

By GUY ELLIOTT MITCHELL

Of the many "sentinel rocks" in various parts of the country, none is more striking than the vast shaft which, at the mouth of Sentinel Creek, in Glen Canyon, Utah, rears its perpendicular form to almost the height of the surrounding canyon walls. This lofty four-sided monolith appears as though blasted out of the adjacent rock walls by the Titans of old and then left unfinished, a monument in the rough. It is one of the most impressive of the rocky wonders of the West, and is of course absolutely unscalable. From one point of view the summit of the rock appears as a woman's head, the eyes closed and a huge blanket enveloping her form. Like the Lady in the Moon, over which some people rave, a good many fail to discern the supposed resemblance. But as a huge natural shaft alone, Sentinel Rock, with its wild surroundings, is a sight not to be forgotten.

Foreign Research Men At Madison

There has assembled at the United States Forest Products Laboratory at Madison, Wisconsin, within recent months the largest group of foreign research men ever gathered at the federal laboratory at one time. Foresters and chemists from England, Australia, Sweden, Finland and Mexico have been detailed to the laboratory for periods ranging from thirty days to two years.

Wilhelm Rosen, a graduate of the Technological Institute of Stockholm, Sweden, and a fellow of the Scandinavian-American Foundation, has completed nine months of research on the distillation of softwoods in the laboratory's chemical utilization section. Eric Ostlin, also a fellow of the Scandinavian-American Foundation, will conclude observations of forest products laboratory methods within a few weeks. In his native country, Mr. Ostlin, who is an expert on forest mensuration, has been directing a general forest survey which the Swedish government started ten years ago.

J. E. Cummins and H. S. Dadswell are on detail from the Australian Council for Scientific and Industrial Research to engage in general forest products research. W. G. Campbell, a fellow of the British Commonwealth Foundation, has concluded a two years' stay at the laboratory. Senor Hermenegildo Barrios, a member of the first class to graduate from Mexico's new forestry school, has spent a year in studying the methods of various forest products laboratory sections. Uno W. Lehtinen of the Finnish State Forest Service, has concluded a month of study. Mr. Lehtinen is a graduate of the Yale Forest School.

Loblolly Pine a Good Money Crop, Says Forest Service

Because of its rapid and salable products the loblolly pine is one of the South's greatest natural resources, declares the Forest Service. Of the four commercially important southern pines, loblolly—also known as old field or short-leaf pine—is the most extensive in respect to the area of land on which it grows and to the quantity of second-growth timber that finds its way to the market.

This pine averages a growth of from 300 to nearly 1,000 board feet of saw timber per acre yearly, if protected from fire. However, the production depends greatly upon the character of the soil, the age of the trees, and the number of trees on the ground. Next in importance to fire protection in the growing of a crop of pine is thinning. If the trees are overcrowded at the start, thinning stimulates rapid growth in diameter of the trees that remain and also increases growth in height. It develops larger trees at a given age and thereby increases their profitableness as a crop.

The value of pine stumpage and lumber has been rising at a comparatively

rapid rate, the foresters assert. At a value of $5 per thousand board feet on the stump, an acre of loblolly pine trees, if protected from fire and if making a yearly growth of from 200 to 800 board feet, will mean a gross return of from $1 to $4 per acre yearly. In Maryland, sap loblolly pine timber has brought as high as $10 a thousand feet on the stump, and the return per acre has averaged between $2 and $8 yearly.

Assuming a cut of 22,000 board feet per acre, on average land, for pine 35 years old, and a present value of $5 per thousand feet, the value of an acre of loblolly pine grown as a crop would be $110, or an average return for 35 years of more than $3 per acre yearly. To this should be added the timber removed in thinning and estimated as the equivalent of 5,000 board feet, worth $3 per thousand feet, or $15 per acre. This makes the total value of the products from the acre $125, or an average gross return of nearly $3.60 per acre yearly.

The loblolly pine may be distinguished from several other pines by its having three leaves, or straws, in each cluster, deeply divided and rough bark, and very prickly burrs, which when closed are about the size of a duck's egg. The leaves vary mostly from 5 to 8 inches in length and the burrs from 3 to 5 inches. The tree grows naturally on a large part of the upper coastal plain and lower Piedmont sections from Maryland to Arkansas and Eastern Texas.

For the information of landowners in the South who are interested in the growing of loblolly pine as a crop, the Forest Service has issued Farmers' Bulletin 1517-F, "Loblolly Pine Primer," which may be obtained free, as long as the supply lasts, on application to the United States Department of Agriculture, Washington, D. C.

Plant Redwoods In Alabama

The giant redwood trees of California are to be given an opportunity to show what they can do in Alabama, says the *Southern Lumber Journal.* A number of young redwood seedlings have been received by the State Commission of Forestry from a west coast lumber company for experimental planting in this state. The young trees have been set out in the State Nursery in Sumter County and after a year's growth they will be transplanted to the most suitable sites that can be found.

The redwood is a tree of very ancient lineage, the species dating back through known geological records to the Jurassic period in the era of reptiles. Formerly this tree was widely distributed over four continents, but at the present time there remains only a small area in Western North America where it still survives the vicissitudes of past ages.

NEEDLE ROCK

This unusual rock formation is in Little Susitna Canyon, along the McKinley Park route, in the country served by The Alaskan Railroad, through the courtesy of which this picture is shown.

OLD ELMS

I love old elms on city streets—
Their splendid colonnade
Above my head in beauty meets,
Making a wide arcade.

I love old elms by cottage gates—
Beneath their fountain sprays
The summer's sun scarce penetrates
To greensward with its rays.

I love old elms on college green—
Brooding beside the wall,
With turban-crowned or drooping sheen,
Venerable to all.

I love old elms alone in fields—
A choir for the meadow larks;
At sunset hour man homage yields
These feather-plumed monarchs.

I love old elms in forest homes—
Their cool, green shadow naves,
Their leaf-mosaiced, Gothic domes,
And God-placed architraves.

I love old elms in any place
At any time of year—
In summer's floral trinket grace,
Or ribbed, and groined, and sere.

—Cora C. Butler.

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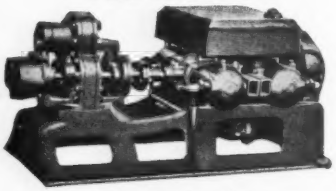

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Cooperative Fire Control In Kentucky

Three cooperative forest protective associations are under formation in Kentucky. About 400,000 acres of forest land are represented by the 59 individual members. The work of protecting these lands from fire is directed by the assistant state forester and one district forester. Each protective area, which may be from 50,000 to 200,000 acres in extent and which is organized without regard to county lines, has a chief warden in charge, with a number of deputy wardens heading "registered crews" of volunteer fire fighters.

For the fiscal year 1927 the total funds for fire protection work, including the state appropriation, Federal allotment, and contributions of landowners, amount to $23,700, or approximately one-tenth of the amount estimated to be necessary for adequate protection. The counties do not contribute. Each timberland owner is asked to contribute at least 50 per cent of the expenditure for the protection of his own lands.

Washington Highway—from New York to Los Angeles

Federal sanction and aid will be given shortly for the construction of the proposed Washington Highway to link the Bronx with Los Angeles, according to advices received recently by Col. Daniel P. Sullivan, president of the American Memorial Parkway Federation.

Commemorating the name of George Washington, the project is hoped to be completed in time for the celebration of the 200th anniversary of Washington's birth in 1932. The tentative route is 3,600 miles long and passes through the following cities: New York, Philadelphia, Baltimore, Washington, Wheeling, West Virginia; Columbus, Indianapolis, St. Louis, Kansas City, Dodge City, La Junta, Colorado; Trinidad, New Mexico; Santa Fe, New Mexico, Albuquerque, New Mexico; Los Lunas, New Mexico; Needles, California, and to Los Angeles.

Trees Not Diminishing Flood Storage Space, says Forester

"The tree growth on the several millions of acres between or inside the levees of the Mississippi could have only a negligible effect upon the level of a flood, and only a nominal influence upon movement of the waters toward the Gulf." This declaration by Associate Forester E. A. Sherman of the United States Forest Service, is made as a response to one of the most unique among the many suggestions offered with a view to controlling the great river.

The author of this suggestion estimates that 85 per cent of the land between the levees from Cairo to Baton Rouge is occupied by "giant cottonwood forest and other kinds of tree growth of all sizes," and urges that the area be completely stripped of the trees to make more room for the water.

"In computing the effect of such tree growth upon flood waters," said Forester Sherman, "we would be concerned not merely with the percentage of land surface occupied but with the cubic space actually taken over by the trees. Actual investigations on representative lands in the Mississippi Valley have shown, for example, that the cottonwood produces a maximum of 7,000 cubic feet of wood per acre at fifty years of age, with an average height of 140 feet. This means about 50 cubic feet of wood volume for each acre-foot of surface. In other words, though eighty-five per cent of this land surface may be taken up by tree growth, that tree growth is occupying not eighty-five per cent but about one-

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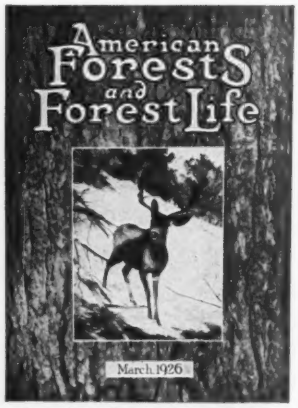

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September, 1927

ninth of one per cent of the cubical area, and its effect toward raising the flood level or retarding the movement of the waters is seen to be wholly insignificant. Any trifling disadvantage thus caused is overwhelmingly counterbalanced by the benefits derived from making this land, which is useless for any other continued production, grow trees."

Vermont Has Severe Fire Season

Forest fire hazard the past spring was the worst that Vermont has experienced since 1908. There have been reported 225 fires which burned over 6,000 acres. The estimated damage amounts to about $35,000. Records of forest fires for the past twenty years show that the yearly average number of fires is 106, burning over 3100 acres and doing damage of $8,800.00.

Due to the prolonged drought this spring Governor John E. Weeks issued a proclamation on April 16, 1927, prohibiting the building of all fires in or adjoining forest lands. This proclamation brought to the attention of the public the seriousness of the situation with the result that there was a marked decrease in the number of fires.

The Vermont Timberland Owners Association in cooperation with the Vermont Forest Service are now erecting a fifty foot steel lookout tower on Glastenbury Mountain. Also about five miles of telephone line is under construction to this station. The forest fire watchman on Glastenbury Mountain will be able to locate fires which may start in some twenty towns in southern Vermont.

Iowa Instructs Boys and Girls

More than seven hundred boys and girls, representing thirty-three counties in Iowa, have completed a course at the forestry and conservation schools being conducted in camps throughout the State by the forestry extension service, according to I. T. Bode, extension forester. Approximately 300 more will receive instructions before the end of the season in September. The course of study consists chiefly of instructions in tree planting and the practical uses of wood. Proper use of fire in the forests and a study of fire hazards are included.

Smoker's Code

Because of the increase in the number of fires caused by smokers, a Smoker's Code" has been devised for Oregon and Washington, calling on users of tobacco to smoke only while stopping in a place clear of all inflammable material, during or right after a heavy rain, inside a vehicle on two-way highways, above timber line, and after smoking, to put out all lighted material. Many of the Western National Forests will be closed this season to camping and smoking except at improved places of habitation, improved camp grounds and other camping grounds authorized by written permit.

Bulletin Discusses Growing Douglas Fir

A few simple measures taken at the time of logging, according to the Forest Service, will insure a come-back in the 200,000 acres of Douglas Fir forests logged in the northwest every year. In a new bulletin by Thornton T. Munger, it is said that the best Douglas Fir lands will produce from 600 to 1,000 board feet on an acre every year. Fire prevention and making provision for a natural seed supply are estimated by Mr. Munger to cost about 22 cents a thousand board feet, logged. This cost, of course, is over and above the customary logging charges in present practice.

North Carolina to Have "Minute Men"

At the suggestion of W. C. McCormick, Assistant State Forester, "minute men" groups will be organized to hold themselves ready for fighting fire much as the minute men of colonial times were on call for battle. The first group has just been organized by District Warden N. R. Renfroe in McDowell County, where nine men have signed the following pledge:

"We, the undersigned citizens of North Cove Township, do agree to cooperate with Warden Renfroe in the suppression and extinguishing of forest fires, and that we will go to all forest fires and report same to warden."

HAUCK WEED BURNERS

(Burn Kerosene)

Kill Seeds and Growing Plants

used by Municipal, County and State Highway Depts. for cleaning weeds from street gutters and curbs, roadsides, irrigation ditches, etc.

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afford the best means for locating forest fires so that they may be extinguished before they have become destructive.

This type of tower is made from 21 ft. to 100 ft., or more, in height. It is safe and easy for anyone to climb.

These towers are made so that they are quickly built up from the ground a piece at a time. They are complete in every detail essential in a most satisfactory observation tower.

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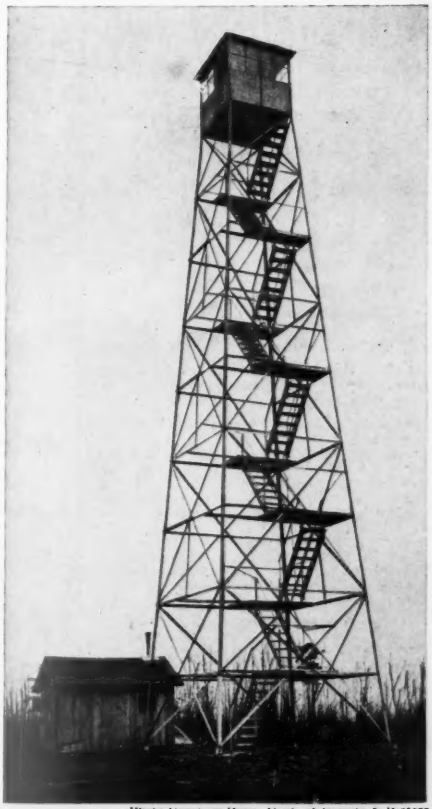
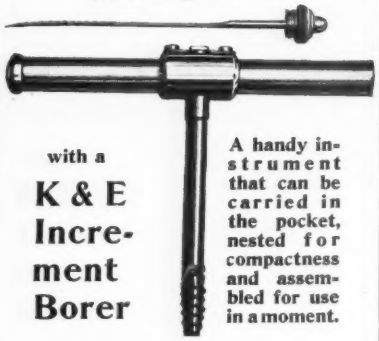


Photo Courtesy Penn. Dept. of Forests & Waters

Examine the HEART of the tree without injuring its future growth.



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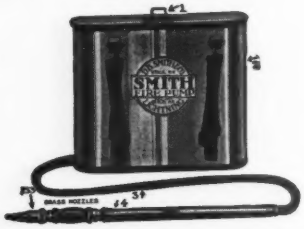

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The Knapsack tank, holding about 5 gallons, is conveniently carried on the back, similar to a pack basket. It has a detachable strainer, preventing any sediments or rubbish entering when dipped into stream or lake for filling. The pump is entirely of heavy brass and has no leather packings or parts to play out or wear out, and is always in working order ready for any fire emergency. One brass cylinder works back and forth inside the other, and slow easy pumping throws a powerful 50-foot stream to any point desired.

The Indian is easily carried over logs and hilly places, and quickly extinguishes fires in trees, crotches, stumps, etc., and is highly recommended. Used on private estates, private and public parks, private and public lumber preserves, state and federal preserves. No forest either small or large should be without this fire pump.

Write for descriptive circular and prices on the Indian and other styles.

Manufactured by

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New Vermont Conservation Committee Appointed

Governor John E. Weeks, following out the will of the 1927 Vermont Legislature, has named on the new Commission on Conservation and Development, Wallace H. Gilpin, Chairman; Mrs. G. C. Robinson, Horton D. Walker, Linus Leavens, Fish and Game Commissioner; and Robert M. Ross, Commissioner of Forestry.

The commission has held two meetings, one of which was a field assembly including inspection of the forestry work on the Billings Estate at Woodstock, where forest plantations were made as early as 1880. The commission also inspected the forestry work on the Calvin Coolidge and the Proctor-Piper State Forests.

Empire State Forests Products Association Meeting

The twenty-second annual meeting of the Empire State Forest Products Association, will be held in the Forestry Building at Syracuse University, October 6. One of the features of the meeting will be an address by Axel H. Oxholm, director of the National Committee on Wood Utilization, on "The Utilization of Northern Hardwood."

Timber Growing in Central Hardwood Region

The woodland owner in the central hardwood region who wishes to keep his woodland growing timber has but two primary concerns, says C. R. Tillotson, forest inspector of the United States Forest Service. He must to a large extent discontinue pasturing the woods, and he must prevent forest fires.

The central hardwood region offers numerous advantages in the growing of timber crops on the farm, in the opinion of Mr. Tillotson. There is a great deal of rough land in farms that is well suited to growing trees while it is of low value for anything else. Even some of the land which has been cleared for cultivation and found unprofitable can be put to good use growing trees.

The common practice of turning livestock into the woods interferes with timber production, Mr. Tillotson maintains. About 75 per cent of the small woodlands on farms are heavily pastured, and the damage to large trees and young growth probably far outweighs the value of the forage. Fires also make heavy inroads on timber yields. In spite of this damage, many fires are deliberately set with the idea of improving the pasture.

One of the principal factors unfavorable to timber-growing in the central hardwood region, says Mr. Tillotson, is the persistence of the idea that all woodland must ultimately be cleared for field crops. Much of the farm land in the region was developed through the laborious process of clearing it of timber, and, although the need for clearing has largely passed, the idea still persists that land should practically without exception be "improved" by cultivation. But there is a considerable amount of poor land on farms in this region better suited to growing timber crops than anything else, and timber-growing is being found profitable by those who go at it seriously.

Ancient Yews of England

(*Continued from page* 521)

to do with yew trees? The answer is just this, that wherever the chalk crops up to the surface along the Old Road, these yew trees are to be found. In some places a row of them may be seen growing seemingly without purpose in the middle of a ploughed field and they give the only means for identifying the route taken by the old track.

At Brockham Warren a well preserved avenue of ancient yews undoubtedly marks the Old Road; yews again mark the way of the track at Merothany and Slete Hill, but nowhere do these trees appear so impressive as they do growing on the heights above Albury. When I last saw them their deep sombre foliage was made all the more striking, for the trees were growing among some rugged twisted Hawthorns, white with loads of blossom. Here, the yews seed themselves and spring up naturally, but there is a mystery about the long lines of them which are to be found widely distributed along the Pilgrims' Road. It is fair to suppose that they were originally planted to guide the wayfarer and give shelter to the many who trudged wearily along the ancient highway or were glad to find rest beneath their ample shade. There they would find protection from winter wind and snow, or summer storms and heat.

If the yew trees flourished in Ringlye Vale, Sussex when the Sea Kings first came to Britain, as tradition has it, there is nothing improbable in assuming that the ancient trees now growing along the Old Road have sprung naturally from those which grew there when the Romans invaded our country, or even when the Druid priests gathered at Stonehenge. Great must have been the number of pilgrims there gathered in that far-off day to greet the rise of the sun at the Summer Solstice.

These men and women may, too, have rested beneath the shade of the yew trees along the Pilgrims' Way. And it may be that Wordsworth had in mind one of these veteran yews when he wrote:

"A living thing
Produced too slowly ever to decay;
Of form and aspect too magnificent
To be destroyed."

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Mr. Joseph H. Dodson calling the black capped chickadees with the suet cake he manufactures. They come by the hundreds and eat this food out of his hand. Note the smile. If he stops smiling, they stop coming.

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Keep the birds with you all winter

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Many birds can be kept north all winter and others will remain a month or two longer if they are provided with food.

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Dodson's Suet Cake is the ideal balanced ration for birds. Made of suet, ground nuts, grain mixture and honey. Price, **40c** a pound. No orders filled for less than five pounds.

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An attractive and perfect food house and shelter. Made of white pine—has ground glass lights so birds will not fly against it—provided with 8 ft. pole. Has two automatic hoppers, wire feed baskets and hooks for suet. Size 24x 24x18 inches. Price, **$11.00;** with copper roof, **$14.00.** F. o. b. Kankakee.

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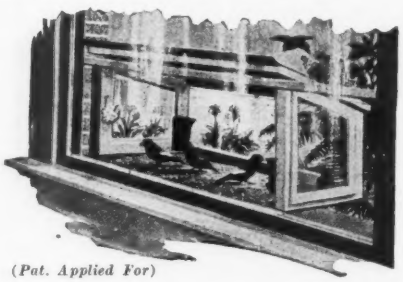
Window feeding table with adjustable bar and copper apron to fit any window. A most interesting and entertaining Feeding Station. Birds soon become tame and your friends with this table. Complete, ready to put up, equipped with two hoppers for Dodson's Grain Mixture. Basket for Dodson's Suet Cake and Hooks for suet. Price, **$12.00;** with all copper roof, **$15.00.** F. o. b. Kankakee.



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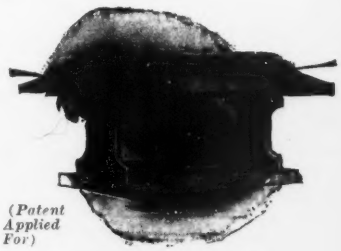

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Dodson's Feeding Car

Can be provisioned at the kitchen or nursery window and slid out to the garden.

The car is made of white pine, and it is 23x15 inches and 11 inches high. It is equipped with drinking cup, wire feeding rack, automatic food hopper and hooks for suet. Furnished with 50 feet of galvanized cable and 50 feet of cord.
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AT the same time you are putting out your feeding stations put up a few bird houses. Fall and winter is an ideal time for birds do not like brand new houses. A little "weather beating" makes the house more natural to them.

Mr. Dodson has studied birds for more than forty years. He has condensed his observations into a 32 page profusely illustrated booklet. Under headings such as "What to Feed Wild Song Birds"; "Trees and Shrubs That Will Attract the Birds"; "Little Things That Birds Like" he interestingly tells all about birds.

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